PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

NOV.
3
1938

Vol. CVII
No. 18

HANICAL AND HUMAN EFFORTS COOPERATE TO SATISFY EVERY CUSTOMER
W YORK & PENNSYLVANIA COMPANY INC.
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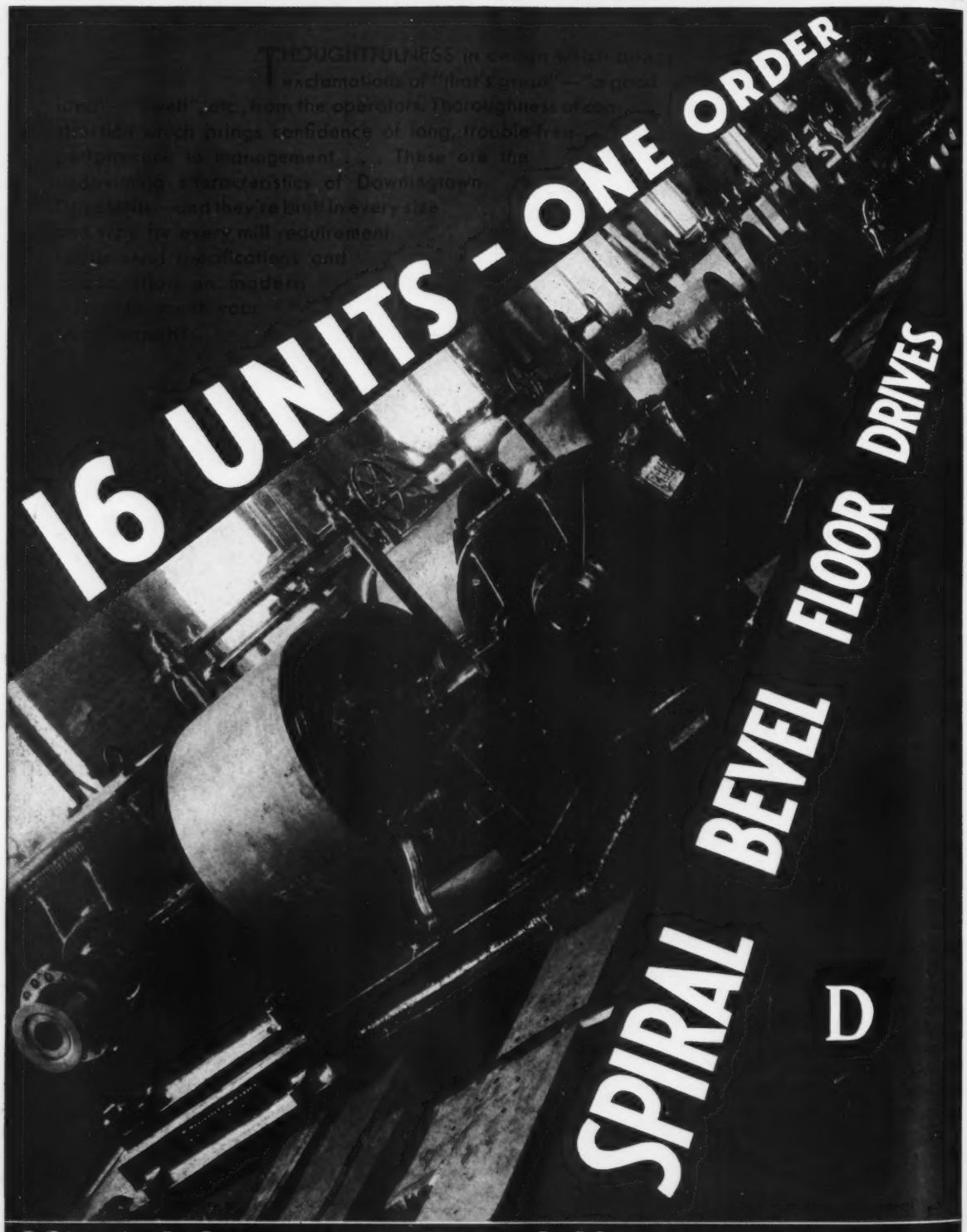
DOWNINGTOWN



DOWNINGTOWN MANUFACTURING CO., DOWNINGTOWN, PA.

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THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

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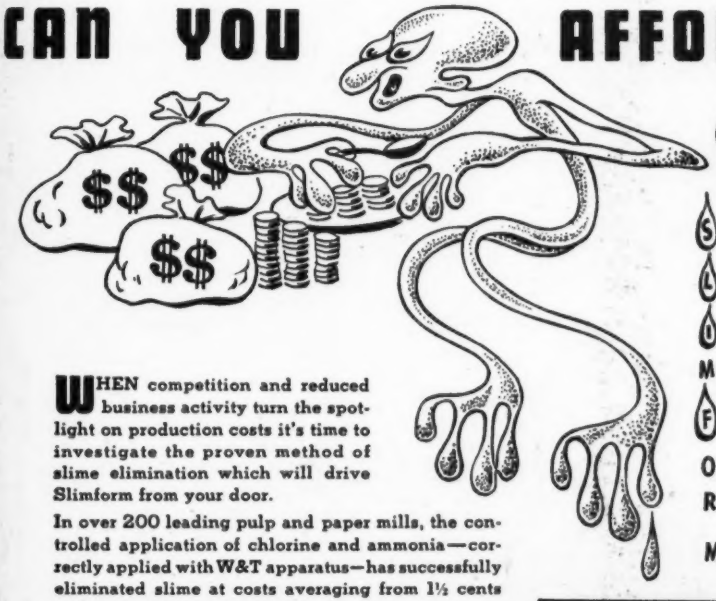
CAN YOU AFFORD TO FEED Slimform?



WHEN competition and reduced business activity turn the spotlight on production costs it's time to investigate the proven method of slime elimination which will drive Slimform from your door.

In over 200 leading pulp and paper mills, the controlled application of chlorine and ammonia—correctly applied with W&T apparatus—has successfully eliminated slime at costs averaging from 1½ cents to 6 cents per ton of product.

In your mill too, Slimform can be banished—slime losses turned into profits.

The story is told in Research Publication #327 "Slime in Paper Mills—Its Origin and Prevention." A request on your letterhead brings you a copy without obligation.

Stock losses—bacterial decomposition and reworking of stock

Lowered Quality—slime spots—pin hole—objectionable odors

Increased Costs—in water, heat, labor, chemicals

Maintenance Troubles—blinded wires—plugged felts

Frequent Clean-ups—slime breaks, poor sheet formation

Obstruction of Lines—stock and white water lines

Recirculation Difficulties—slime growths in recirculated systems

Mechanical Strain on felts and wires—shortened useful felt and wire life

WALLACE & TIERNAN CO. INC

Manufacturers of Chlorine and Ammonia Control Apparatus

NEWARK, NEW JERSEY · Branches in Principal Cities

OTHER W&T CONTROL SERVICES:

Automatic pH Control Dry Chemical Feeders Bleach Plant Equipment

Testing Instruments for Chlorine and pH

JOHN W. FERGUSON COMPANY

INCORPORATED

ENGINEERS AND BUILDERS

ESTABLISHED 1892

PATERSON, NEW JERSEY

BUILDERS

OF

THIS PAPER MACHINE BUILDING AND POWER PLANT

AT

LOCK HAVEN, PENNSYLVANIA

FOR

NEW YORK AND PENNSYLVANIA COMPANY

THE JOHN W. FERGUSON CO., INC. HAS ALSO RECENTLY EXECUTED

REPEAT ORDERS

FOR

WRIGHT AERONAUTICAL CORP.	PATERSON, N. J.
BENJAMIN MOORE COMPANY	NEWARK, N. J.
DE LAVAL STEAM TURBINE CO.	TRENTON, N. J.
SPENCER KELLOGG AND SONS, INC.	BUFFALO, N. Y.
REILLY TAR & CHEMICAL CO.	NEWARK, N. J.
STANDARD SANITARY MFG. CO.	NEW YORK, N. Y.
PROCTER AND GAMBLE MFG. CO.	CINCINNATI, OHIO
AMERICAN STEEL FOUNDRIES	BUFFALO, N. Y.
JACQUES WOLF CO.	CLIFTON, N. J.
HOFFMAN-LA ROCHE, INC.	NUTLEY, N. J.
EASTERN TAR PRODUCTS CORP.	BALTIMORE, MD.

PAPER TRADE JOURNAL

Reg. U. S. Pat. Off.

PAPER

SIXTY-SEVENTH YEAR

Established Feb. 17, 1899
Consolidated Nov. 16, 1899
with Paper Trade Journal.

Vol. CVII, No. 18 Thursday, November 3, 1938

Established Sept. 21, 1918
Consolidated Feb. 19, 1925
with Paper Trade Journal.

New York & Pa. Co. Builds Model New Unit

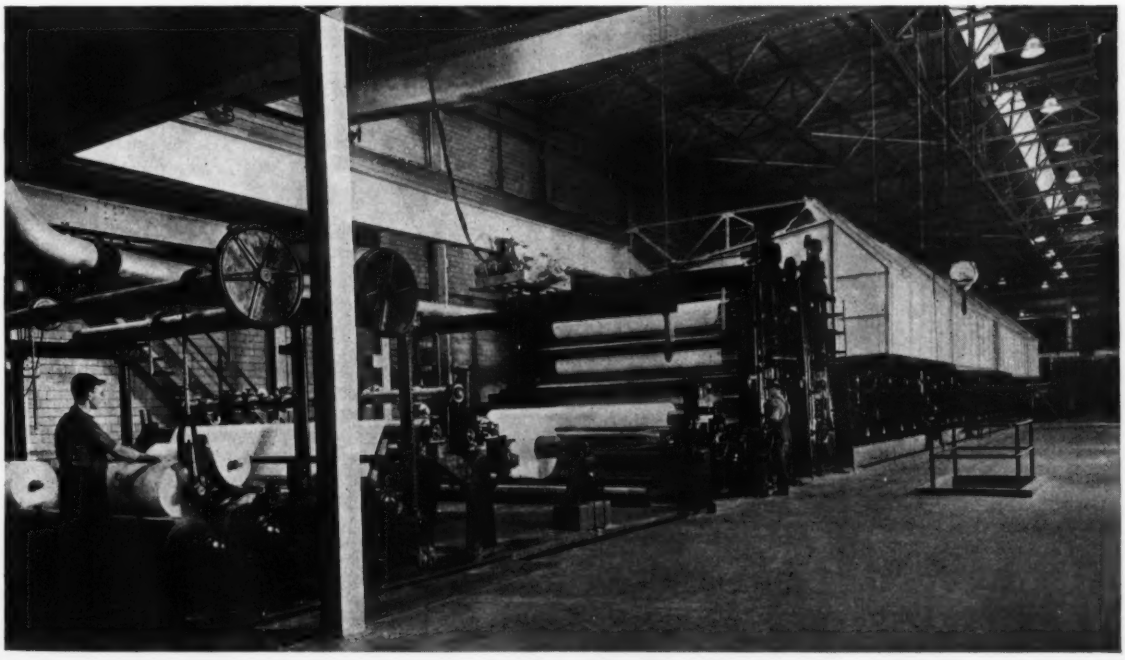
Installs 166-Inch Beloit Fourdrinier and Thoroughly Up-To-Date Auxiliary Equipment In Expansion Program At Lock Haven, Pa.—Also Modernizes Power Plant To Effect Economies — Cost Is Over $2,000,000.

The New York & Pennsylvania Company, known for many years as one of the outstanding and progressive concerns in the industry, has recently completed new installations, costing over $2,000,000, at its plant in Lock Haven, Pa. This ambitious program of modernization and expansion was formulated several years ago as a continually progressive movement designed to keep the plants of the company equipped with the latest possible developments of their research and engineering staffs.

Following by only a few years the construction of two large machines, the company has just installed the third which is the most modern and highly efficient high grade paper machine that it is possible to build today, with beaters, jordans, etc., and in fact all the necessary auxiliary machinery of types that are the last word in every respect. To take care of the increased tonnage, vital changes and improvements have also been made in the finishing and super calender departments.

In addition to the above, in order to provide increased power and effect definite economies, the New York & Pennsylvania Company has modernized its power plant with the installation of two new 5000 K.W. turbines containing many new features, which will be discussed separately in this article. This expansion and these improvements will put the company in a position to meet adequately the increasing demand for finer paper.

The design and detailing of the building and installation are the work of the company's own engineering department, with the result that a tailor-made job has been secured which fits the company's specific problems in the manufacture of the types of



View of the 166-inch Beloit Fourdrinier from the Dry End.

paper which it produces. With the cooperation of the various manufacturers, the major items of equipment were designed to meet all requirements for the products to be made, and differ from standard equipment in many details. With the exception of the building construction and the erection of the turbines, the company's own forces were used for the erection of all equipment—a policy which has been successfully carried out for several years.

VIEW OF THE OUTSIDE OF THE NEW UNIT. NOTE THAT THERE ARE NO WINDOWS IN ANY PART OF THE NEW BUILDING.

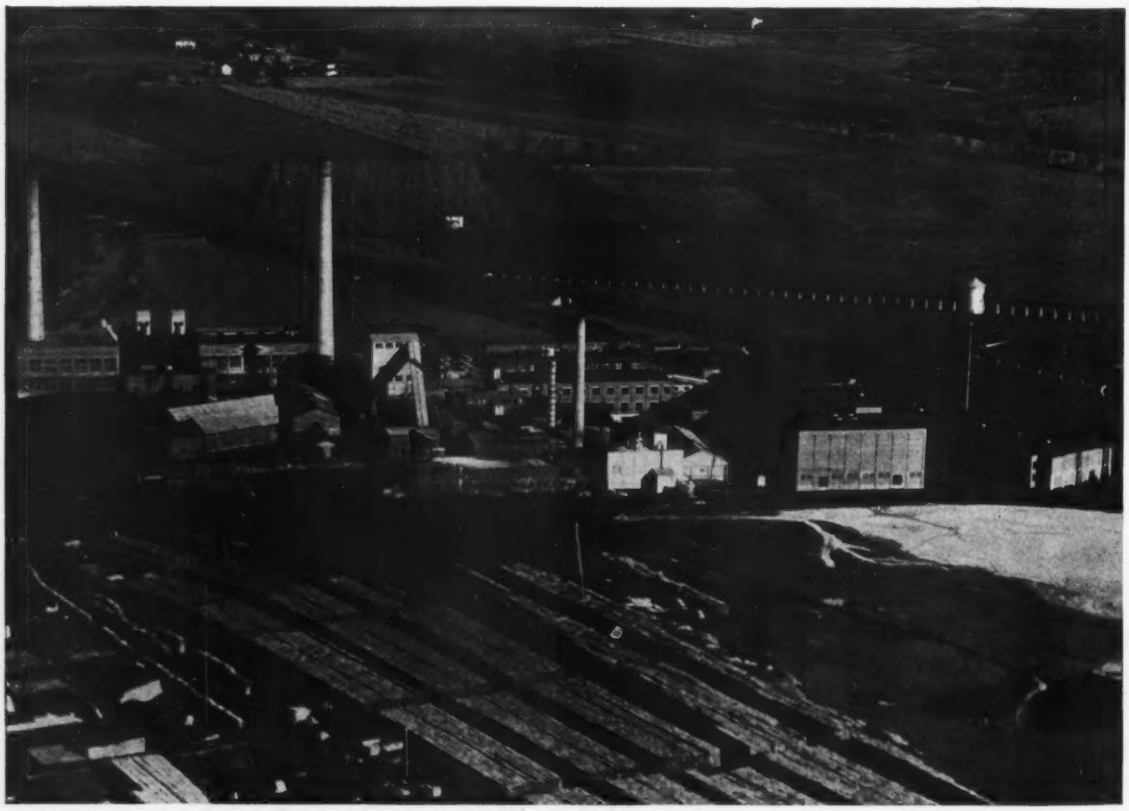
Building Ideally Suited

Before construction was started investigations were made to develop the possibilities of utilizing unusual types and methods of construction in order to secure a paper machine building that would be ideally suited to its purpose; that would be free from condensation troubles; that could easily be kept clean, and at the same time maintain suitable conditions regarding temperature with an efficient and economical heating, ventilating and moisture absorption system.

In order to reduce the heat losses to a minimum it was decided to use insulated construction. A 10½ inch two-brick-wide wall section was used with common brick for the exterior, ceramic tile for the interior, and a 2½ inch air space filled with Vermiculite. The bond was secured by using headers every ten courses, and metal wall ties were used extensively. After a number of tests a high lime masonry mortar was used, all brick joints were tooled under rigid inspection, and the inside face of the common brick course was plastered with mortar before the tile courses were run. In this way moisture infiltration was practically eliminated. The walls are tied into the building steel and carry no load.

The roof construction is of precast concrete channel slabs on steel purlins with a 1½ inch layer of insulating cork and a standard asphalt smooth-surfaced roof covering on the cork.

The heating system penthouse walls are of corrugated asbestos cement sheets for the exterior face, and flat asbestos wallboard for the interior face, sup-



VIEW OF NEW YORK & PENNSYLVANIA PLANT AT LOCK HAVEN, PA., SHOWING NEW BUILDING IN FOREGROUND AT RIGHT.

NEW YORK & PENN.

Goes in for . . .

Continuously Clean Felts

VICKERY FELT CONDITIONER

They *don't* want needless and expensive shut-downs and they *do* want better, more uniform paper finish and maximum water removal at the presses. *So* both first and second press felts are equipped with Vickery Felt Conditioners.

Continuously Clean Rolls

VICKERY DOCTOR

They know that one way to get better paper and more of it per day at lower cost per ton is to keep every roll in shape to do its job. *So* breast roll, dryers, breaker rolls, calender rolls and drum reel are equipped with Vickery Doctors.

If *your* mill is not yet completely equipped with Vickery Felt Conditioners and Vickery Doctors ask us to prove how quickly they can pay for themselves. We'll make layouts and estimates without obligation on your part. Write

BIRD MACHINE COMPANY

SOUTH WALPOLE, MASSACHUSETTS

ported on steel framework, and the space between is filled with rock wool. The roofs of the penthouses are of the same material as the main building.

No Windows in New Building

There are no windows in any part of the new building. Natural lighting in the machine room is provided from a continuous double glazed corrugated wire glass monitor, the frames for which are fabricated integrally with the main building trusses. The double glazing was adopted to reduce heat losses. Additional lighting is provided by glass block panels above the generator and switchboard balcony. The doors are made of No. 13 gauge steel sheets on skeleton frames of steel channels and wood cores, the hollow space between the sheets being filled with insulating wool. Special hinges with needle bearings were installed so that swinging of the doors will be easy in spite of the added weight. All unnecessary openings in the basement walls were eliminated, there being but one door to the exterior and one passageway provided with double doors leading to an adjoining basement.

A bridge crane with two 7½ ton electric hoists and electric bridge travel was installed for maintenance and repair work.

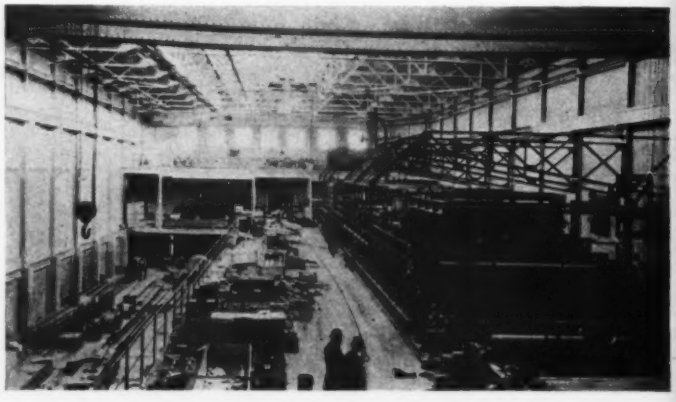
The main building construction is of cement and steel, this being adopted in preference to all concrete construction due to the ease with which it could be altered for future changes. A great deal of thought and attention were given to the building details in order to secure as satisfactory and economical construction as could be obtained. While it is expensive in appearance, actually the cost of the type of construction used compares very favorably with previous buildings.

The heating ventilating and moisture absorption system starts with two penthouses located on the roof over the wet end of the machine. In each of these there are two propeller fans, a preheater, a continuous traveling air filter screen, and a reheater equipped with thermostatic controls so that any desired temperature of air can be maintained. Tempered fresh air from these penthouses is admitted to the machine room near the roof and is exhausted by six propeller fans, five of which are under the hood and one of which is near the Fourdrinier. All are located in the side of the building.

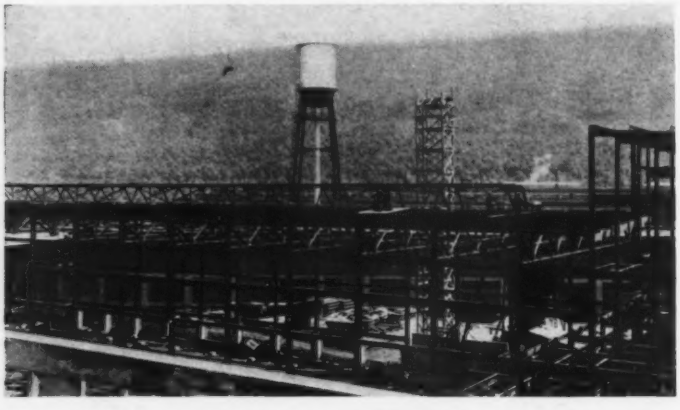
VIEW DURING CONSTRUCTION; NOTE SHEPARD NILES CRANE ALREADY IN PLACE.

New Type of Hood

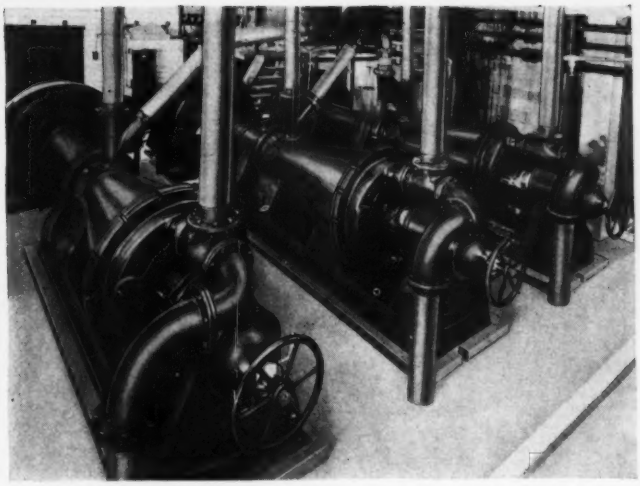
The hood over the drier section is quite different from the conventional type which lacks accessibility. It is supported from a series of trusses cantilevered from the main building columns and extends several feet beyond the front side of the machine. The roof of the hood is composed of panels 16 feet square, resting on the bottom chord of the trusses, and these panels can be removed quickly as a unit, thus allowing access to the drier section. They are constructed of single cell type Keystone flooring with a light gauge aluminum cover sheet and stiffening channels at the ends and sides. The hollow cells are filled with rock wool insulation. This construction gives a non-corrosive surface exposed to the humid air from the driers and will not chip nor crack when the panels are removed. In spite of the size of the removable panels, they weigh but 9 pounds per square foot. The sides and ends of the hood are panels of the usual cement and asbestos sheets on angle frames. Any of these panels can be removed by undoing four bolts.



HOOD BEING ERECTED OVER THE PAPER MACHINE



BEGINNING THE CONSTRUCTION OF THE STEEL WORK.



and another mill again selects

JONES' EQUIPMENT

Behind the selection of equipment installed in the New York & Pennsylvania Company mill is the sound experience of mill men alert to advanced machine requirements. And as their needs increased, Jones' equipment was again selected . . . a real tribute to the efficient and economical advantages of Jones-Built machines.

The latest type Jones stock preparation equipment installed comprise: four 2,000 lb. High Speed Beaters, one 2,000 lb. Breaker Beater, three Jones Majestic Jordans—350 H.P. each, and three Jones 40″ Rotary Screens.

Illustrations show Jones Screens and Majestic Jordans in operation at New York & Pennsylvania Company Mill.

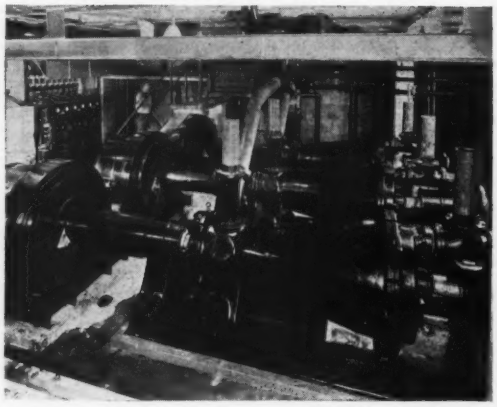
Jones

E. D. JONES & SONS COMPANY-PITTSFIELD, MASS.

Builders of Quality Machinery for Paper Mills

Careful Consideration Given to Layout

In making the layout of equipment a great deal of consideration was given to the size and location of the various elements. The machine was to operate at a speed of from 200 to 800 feet per minute, and be capable of making a wide range of grades and weights of paper. Flexibility in all auxiliaries was highly desirable, and cleanliness of the stock was of paramount importance. The final result was that the beaters were put on the first floor, and slush stock storage is provided in four large tanks located directly above the beaters and piped in such manner that any beater may receive stock from any one of the four tanks by gravity. Stock is pumped to these slush tanks from various departments in other parts of the mill. Each pair of beaters is dumped by a pump of sufficient capacity so that it will remove stock from the beaters faster than it can flow out. The stock is pumped to the third floor into either of two chests from which there is gravity flow, controlled by a float valve, to the jordans on the second floor. The jordaned stock is pumped by either or both of two pumps to either of two machine chests which are located on the third floor. The machine chests discharge by gravity to the head box of the machine and the flow at this point is controlled by a stock meter. Duplicate chests are provided so that in changing orders to different stock or colors, one chest may be prepared for the new order while the other is running to the machine.

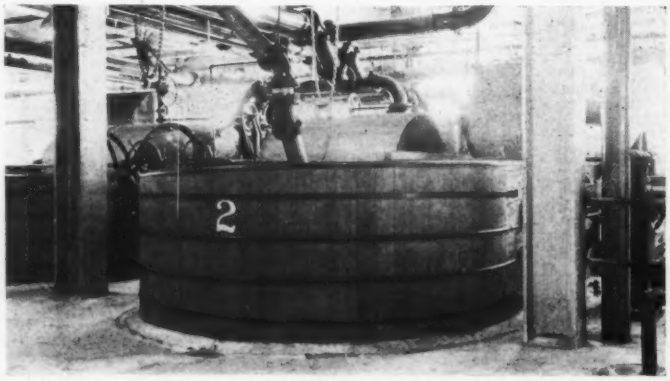


THREE NEWLY REDESIGNED MAJESTIC JORDANS BRONZE FILLED FOR FINISHING STOCK.

Emphasis on Cleanliness

In order to secure cleanliness noncorrosive materials have been used throughout the installation. The beaters are high speed type with wood tubs, bronze knives and white ceramic tile bottoms. The drives for the beaters are individual motors on Rockwood bases with endless belts. Each beater is equipped with one washer and size is supplied from an overhead Everdur tank.

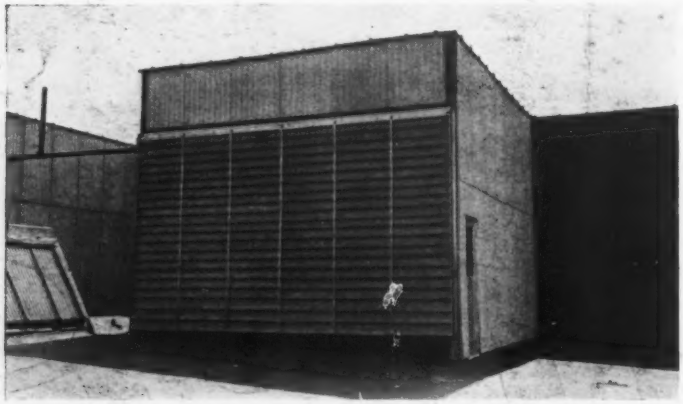
The jordans are also equipped with bronze knives and are of new design with cartridge-type barrel type roller bearings for the radial and thrust loads. The plugs may be removed without disturbing the bearing housings or removing the couplings. The jordans are driven at 400 rpm. by 350 hp. splashproof synchronous motors. A standard Fast jordan coupling is used. Each jordan has an indicator showing the plug position at all times. The jordans are arranged for parallel type operation only, and the piping is arranged so that the jordans are kept full but do not pump against a head.



ONE OF THE LATEST TYPE 2000 POUND JONES HIGH-SPEED BEATERS EQUIPPED WITH BRONZE ROLLS AND BED PLATES.

The cylindrical tanks are furnished with slow speed agitators of refined design with all metal parts in contact with the stock either lead covered or of bronze. These agitators are suspended from a reduction gear unit at the top which carries the entire weight and thrust load on antifriction bearings. A special bronze casting at the bottom of the tank is used as a steady bearing and has an oilless type bushing in a bronze cartridge which can be removed by undoing three Everdur bolts. The tanks are equipped with conical bottoms with the lower sweep of the agitator very close to the bottom.

The float box from the head box to the three screens is of unique design, and very satisfactorily splits the flow into three even quantities without the use of baffles.



ONE OF TWO VENTILATING PENTHOUSES ON ROOF OVER WET END OF THE MACHINE.

Duplicate Pumps Installed Throughout

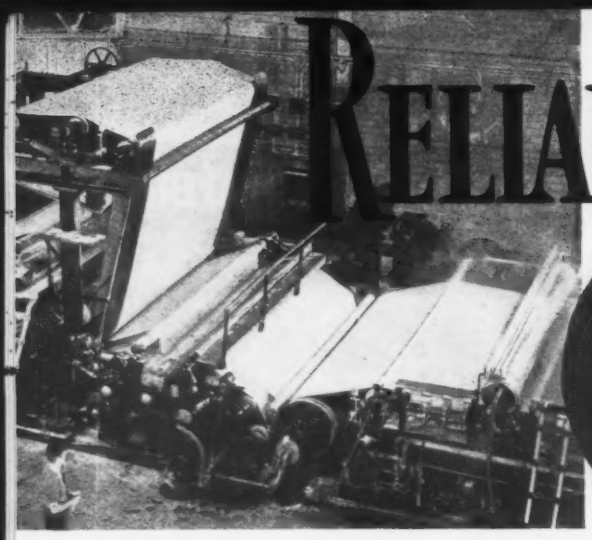
Duplicate pumps were installed throughout, a single one having a capacity to supply the machine at a speed of approximately 500 feet per minute so that when

NEW CAMACHINE 46-9 CALENDER WINDER

HIGH SPEED WEB PRESSES OPERATE AT PEAK EFFICIENCY WITH PERFECT ROLLS PRODUCED ON CAMACHINES

NOTE: ILLUSTRATION SHOWS WINDER AT MILL OF NEW YORK & PENNSYLVANIA CO. INC.

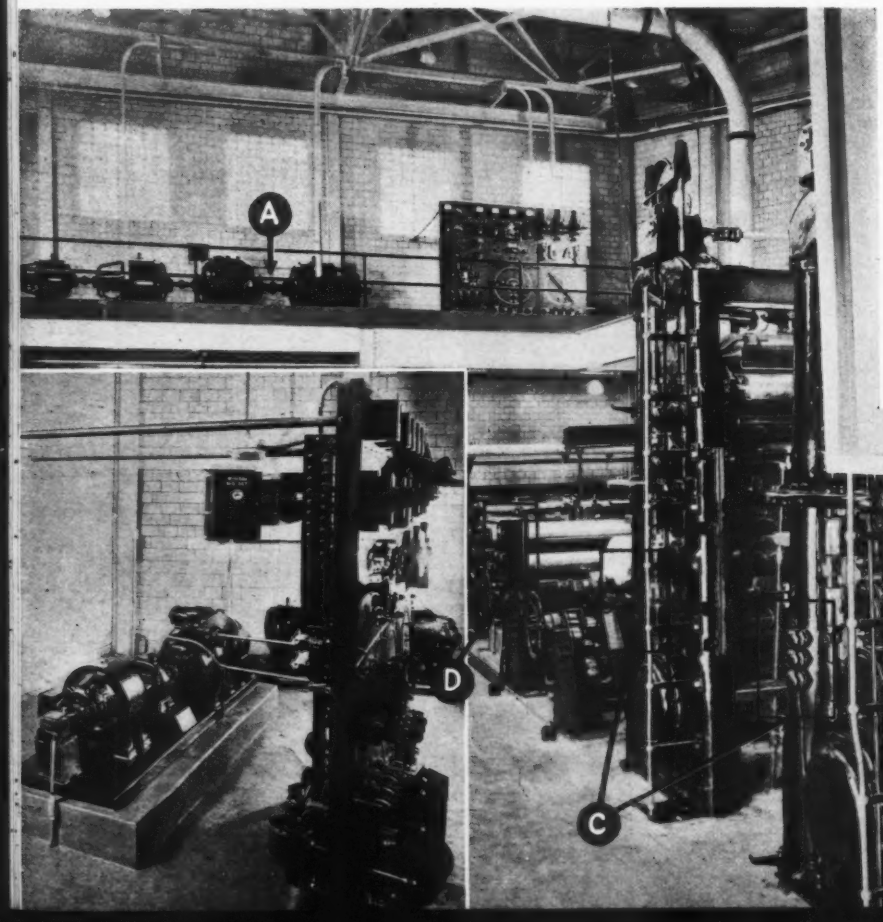
CAMERON MACHINE COMPANY
61 POPLAR ST. BROOKLYN, N.Y.



RELIANCE SECTIONAL

Over 200 drives using the Harland principle are in operation in 22 countries—more than all other systems combined. « « It is used successfully on the world's largest board machine . . . for wide, high-speed news machines . . . for a 73-inch fine paper machine operating 40 to 200 feet a minute. « « It's a truly universal drive suitable for making paper of every class.

ONE LOOK about this modern mill and you will sense the background of thinking behind it. Conceived and engineered with an eye to stepping up quality, novel methods have been used to make book paper better at higher speeds over a wide size range. « « « A basic factor in achieving the planned results is the Reliance Sectional Drive using a system which has set a record for reliability on over 200 machines in twenty-two countries. With this simplest of all systems, this new mill has a drive adaptable to all its conditions and practices—one that can be depended upon for stable speed control and draw adjustments so essential in making paper of uniform weight, strength and quality.

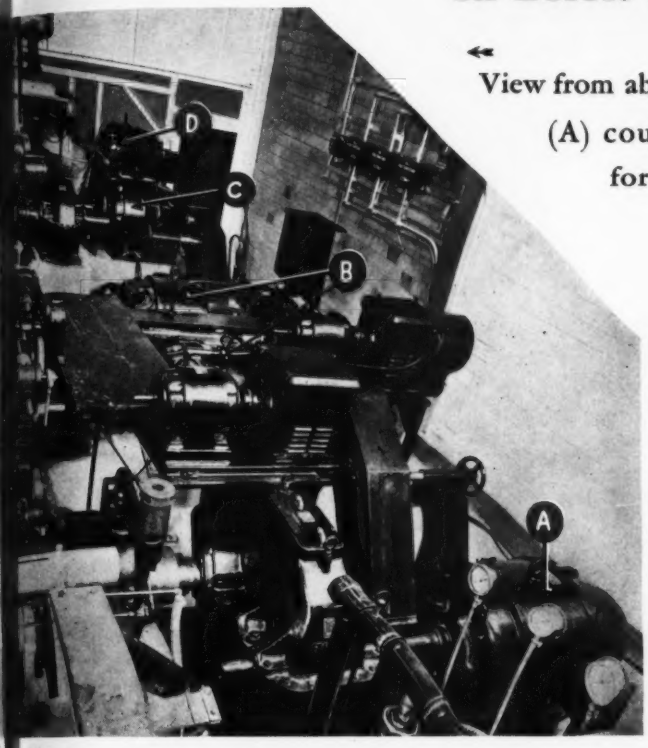


A-c. power is brought to the variable-voltage motor-generator set (A) on the mezzanine floor. Here and in the adjoining panels is centered power and its control for the entire machine. « « Through "fast-slow" switches at operating station (B) machine speeds are varied by variable-voltage control from 200 to 800 f.p.m. An electrical tachometer shows machine speeds in f.p.m. « « Sturdy, palm-operated push-buttons (C) are placed at the front of each section for starting, stopping, and inching. « « Operator's panel (D) at the reel provides for control of tension. « « Inset shows master alternator set in back of panels on mezzanine.

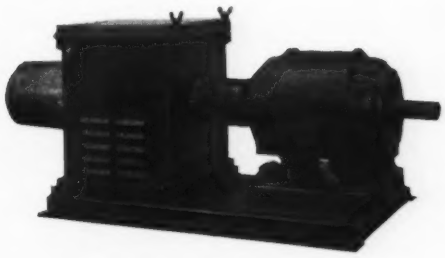
Paper-Machine DRIVE

at NEW YORK & PENNSYLVANIA COMPANY

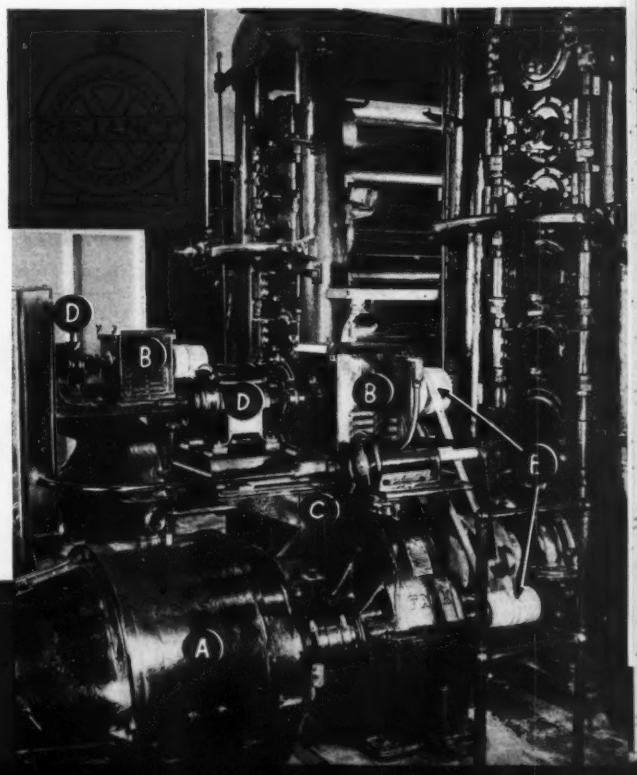
on Beloit 166" Fourdrinier Paper Machine



« View from above Fourdrinier wire, showing driving equipment (A) couch motor, (B) dual press motors, (C) motor for additional press, (D) motor for smooth rolls.



Section Interlock with synchronous motor. This compact, responsive unit used at each section except the reel is the heart of the Harland System. It is a *mechanical* differential regulator without mystery which serves to interlock the several section motors, keep them in step, and maintain draws between sections.



» 125 hp. motor (A) driving second calender. « « « The section interlock (B) is mounted on top of the reducer with draw control handwheel (C) which moves belt sideways on cone pulleys (E). « « « The small synchronous motors (D) coupled to the sectional interlocks here shown are but two of a series of ten forming an electric "master shaft" extending from the calenders to the couch. These ten synchronous motors are connected to the master alternator on the mezzanine which provides a reference frequency for any linear speed desired.

Drives using the Harland System are manufactured and sold in the United States by

ANCE ELECTRIC & ENGINEERING CO.
ROAD • CLEVELAND, OHIO

BEL

BUILDERS OF THE 166" UR
THE LOCK HAVEN MILL N

THE BELOIT WAY

BELOIT IRON WORK

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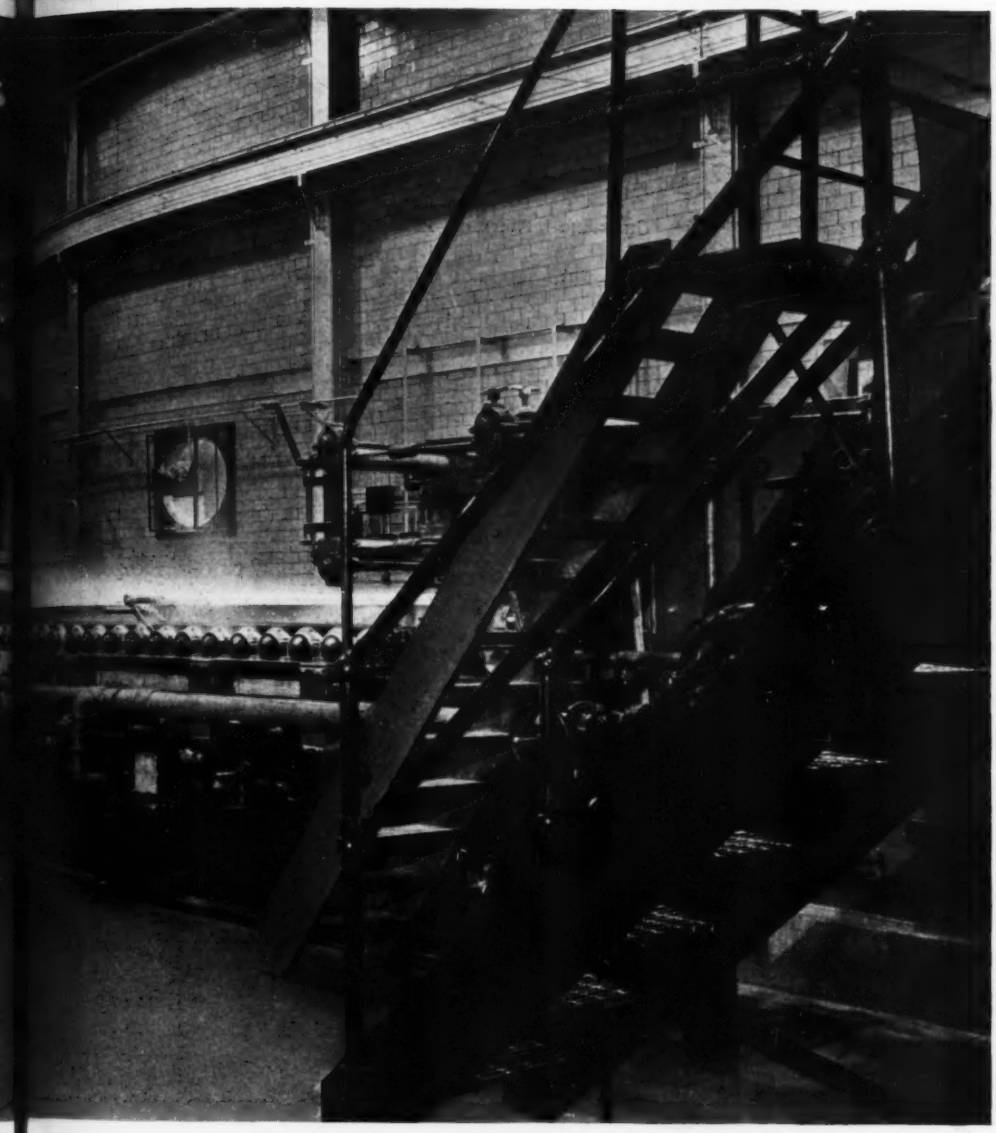


URDRINIER MACHINE IN
NEW YORK & PENN. CO.

IS THE MODERN WAY

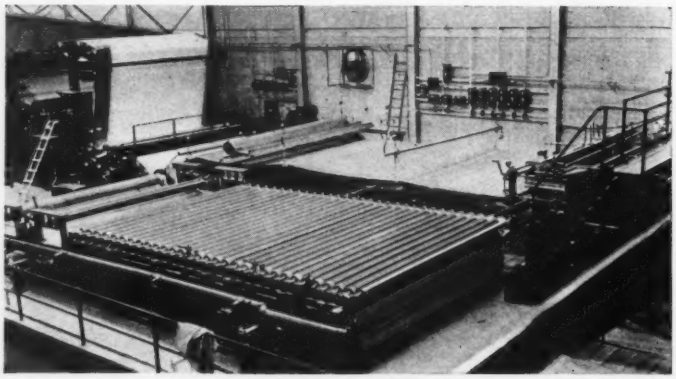
BELOIT, WISCONSIN

running at slow speeds one pump is sufficient and not so large that adjusting it to proper capacity becomes difficult. The same arrangement is made throughout the return pumps, flat box pumps, etc., all being in duplicate.

The piping is of seamless copper tubing up to and including 10 inches and the larger is spiral welded steel, rubber lined.

Centrifugal pumps were used everywhere except for handling broke and saveall stock where the consistency runs high and the location did not permit a satisfactory centrifugal installation. Pump circulation is used in the broke chests for agitation.

Stock overflows are not used, as constant levels are maintained throughout by float-operated valves. On the beater dump pumps, air-operated plug valves which are open only when the motors are running, are used to serve as check valves.



CHANGING A WIRE ON BELOIT FOURDRINIER.

Beloit Fourdrinier

The paper machine is equipped with a Beloit removable Fourdrinier having a wire 166 inches wide, and 80 feet long. It is of the adjustable pitch type, and is provided with a Beloit heavy duty super shake to cross the fibers and provide good formation at all speeds. The head box of this Fourdrinier is equipped with a double adjustable slice. The two slices can be readily adjusted in the machine direction with respect to the breast roll center line, and vertically to give the best flow of stock onto the wire. The slices are arranged for deckling in. The table rolls are of aluminum covered with rubber, to keep the weight of the shaken equipment down to the minimum and thus permit an effective shake at high speed. The table rolls are carried in anti-friction bearings.

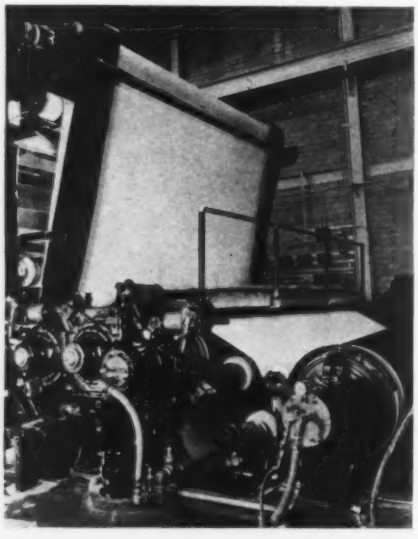
The suction boxes are of stainless steel and are supported on bronze springs, oscillated by a hydraulic driven oscillator.

The Fourdrinier section is carried out of its operating position on rails by power while the wire is strung in a loop and the Fourdrinier is then returned to its operating position inside the wire loop.

The press section consists of a Beloit horizontal dual press, having a rubber covered suction press in the first press position, centrifugally cast bronze covered roll in the center position, and a rubber covered roll in the second press position. All three rolls are carried on anti-friction bearings and the two outside rolls hinged to swing against the center roll to form the first and second press nip. Each press is provided with a separate felt having motor driven basement stretchers. Following the dual press is a reverse third press having bronze and rubber covered press rolls in anti-friction bearings. A smoothing press is located at the entrance of the drier section.

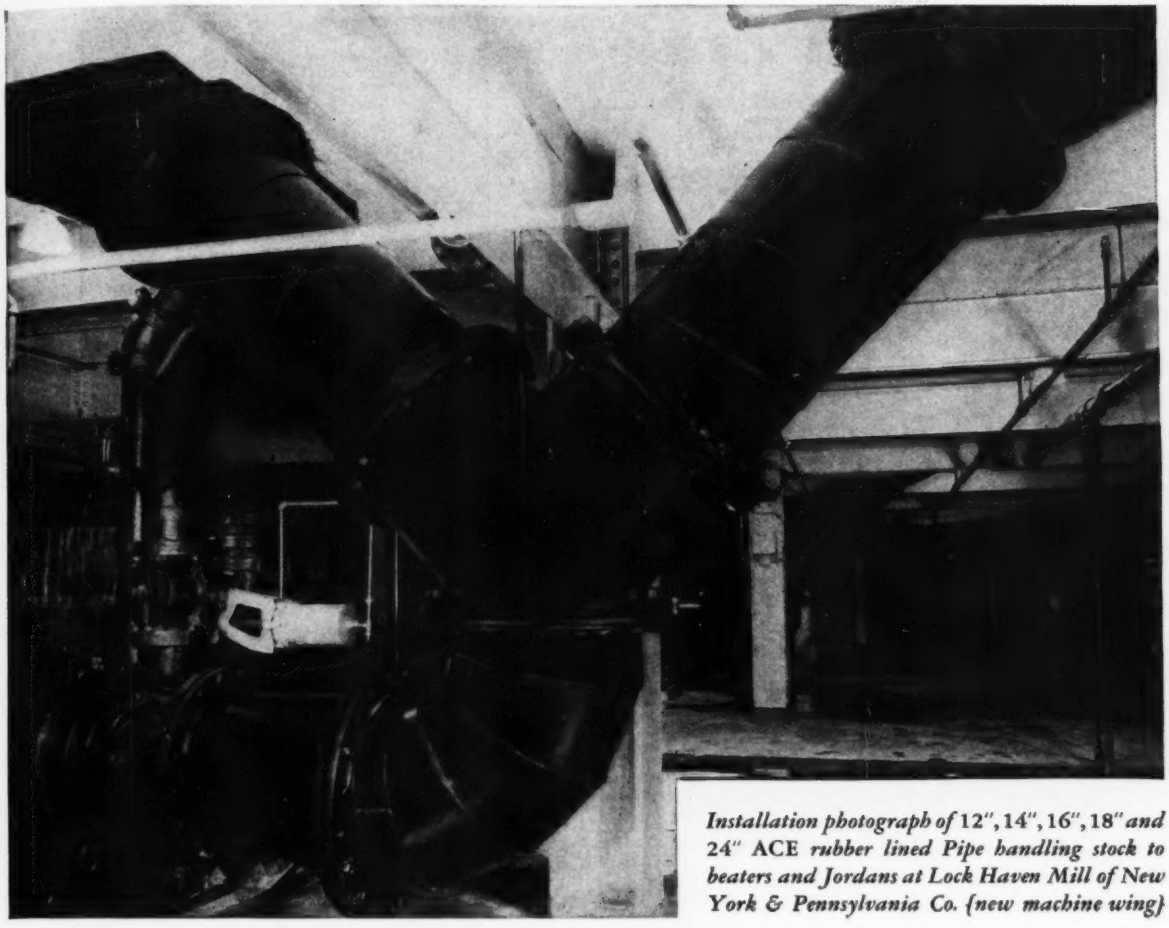
The Drier Section

The drier section consists of thirty-four paper driers, 48 inches in diameter, arranged in two decks, carried in sealed oiltight bearings, provided with an automatic oiling system. The felts in the drier section are provided with a number of felt driers. Breaker stack and size press located in the drier section make this machine capable of producing the finest grades of paper. The driers are provided with



SHOWING BELOIT DUAL PRESS.

DRAINER CHEST AT RIGHT; NOTE JORDAN CHESTS ABOVE JORDANS.



Installation photograph of 12", 14", 16", 18" *and* 24" ACE *rubber lined Pipe handling stock to beaters and Jordans at Lock Haven Mill of New York & Pennsylvania Co. {new machine wing}*

Extensive installations of Ace Rubber Lined Pipe and Fittings in such industries as Rayon, Mining, Steel, Plating, Copper Refining, Foodstuff, Drug, and many others, now handle everything from pre-softened water to the most corrosive acids . . . with *complete protection against corrosion and contamination.*

ACE Rubber Lined Pipe and Fittings are available with either hard rubber or soft rubber lining. Both may be used with temperatures up to 185° F. Usually supplied in sizes from 2 to 12 inches, with larger sizes on order.

ace
Hard and Soft
RUBBER LININGS

CATALOGUE 300-3 ON REQUEST

Prevent Corrosion

AMERICAN HARD RUBBER COMPANY
11 Mercer Street, New York, N. Y.
AKRON, OHIO • 111 WEST WASHINGTON STREET, CHICAGO, ILLINOIS

high speed condensate removers and duplex type oil-less steam joints. Drier gears have special cut teeth. The gears are properly protected with a continuous horizontal guard.

There are two stacks of calenders on this machine, each seven rolls high. The rolls are all mounted in heavy duty anti-friction bearings including the bottom rolls. The stacks are equipped with motor driven lift, having push-button control within convenient reach of the operator.

Beloit uniform speed reel having the drums and spools mounted in roller bearings, and a Moore & White four-drum winder complete the machine equipment.

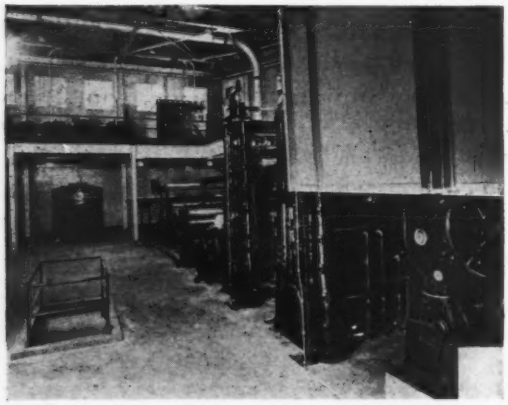
Sectional Electric Drive

With the stress on "quality paper production" and the increasing speeds at which production must be carried on, a very high degree of performance is imperative in the motor-driven of today's paper machines.

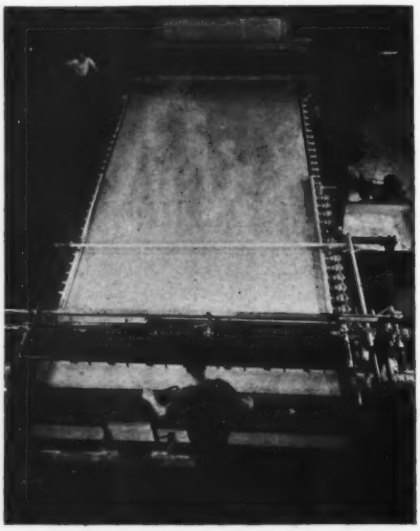
The new 166 inch paper machine is equipped with a sectional electric drive supplied by the Reliance Electric and Engineering Company using the Harland system. Individual motors are applied to the various sections of machine with enclosed gear reducers and flexible couplings. There are eleven sections from the couch to the reel inclusive, and the dual press and size press each have two motors. The motors range in size from 125 hp. motors installed on the couch, first drier section, and both calenders to 15 hp. motors on the size press rolls. An overall speed range of 200 fpm to 800 fpm is provided.

All sections except the reel have Harland interlocks and draw control mounted with the motor drives. Adjustable draw is provided with all except the first drier drive. The section interlock is a differential regulator consisting of a mechanical, differential gear and a regulating rheostat combined in a rugged, drip-proof housing and assembled with the cone pulley draw control and a small synchronizing motor. This compact, responsive unit is readily accessible to observation of "what is going on".

Heavy, palm-operated push buttons are located at the front side of the machine at each section. A magnetic controller for each section is enclosed in a suitable protecting cabinet and located at, or reasonably near, the drive for that section. An operator's panel is provided for the dual press with rheostats for effecting desired division of load between the two motors, and ammeters which give visual load indication. A similar panel is provided for the size press.



CALENDERS, REEL AND REWINDERS; NOTE TACHOMETER AND SPEED-CONTROL IN RIGHT FOREGROUND, MOUNTED AT END OF DRIER SECTION.



LOOKING DOWN ON THE WIRE OF THE NEW FOURDRINIER.

The reel has an operator's panel including a rheostat for regulating the tension in the sheet and an ammeter indicating the current drawn by the reel motor which bears a direct relation to this tension.

At the driers, near the first calender, there is a small operating station consisting of an electrical tachometer calibrated in feet per minute on a "Fast Slow" speed control for the machine as a whole.

A variable voltage motor-generator set consisting of a 400 hp. synchronous motor, a 250 kw. main generator, an auxiliary generator and exciter operates on the 550 volt a-c. mill system and provides the direct current power and speed control to the several sectional motors as a group. The auxiliary generator serves the section motors for individual inching and crawling operations, and acceleration to running speed.

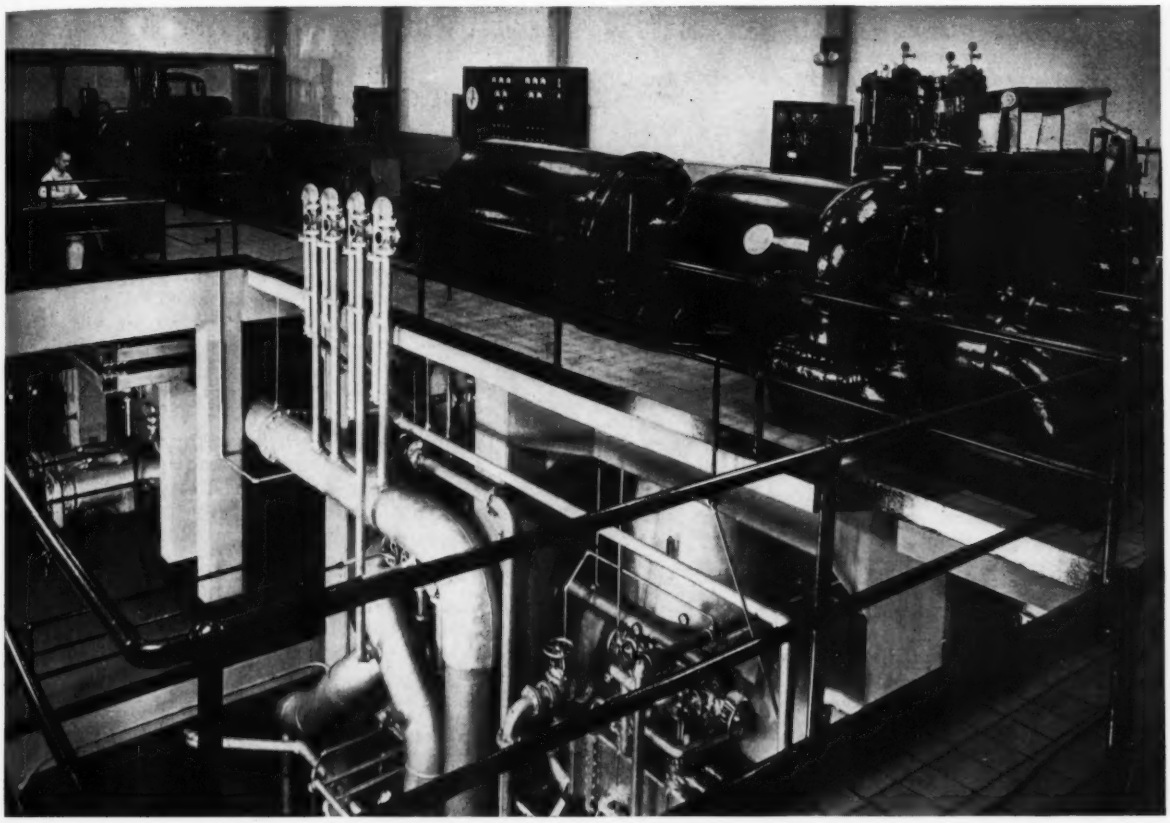
The generator and main control panels consist of a synchronous motor starter of the full voltage, magnetic, frequency relay type, and two panels mounting circuit breakers, meters, and motor-operated field rheostats for the generators, pilot relays, and a voltage regulator for the exciter.

There is a master set consisting of a synchronous motor and mechanical variable speed transmission driving an alternator which provides a reference frequency for any linear speed desired from which the section interlocks regulate.

The power distribution from the generator panels and motor-generator set has been materially simplified by the mill engineers in comparison with previous installations of sectional drives on paper machines. It involves an accessible duct in which are supported three direct feeders common to all section motors, also carries the two field circuits, a 3-conductor cable connecting the section interlocks with the master set, and a 5-conductor control cable. In line with each individual section controller along the drive side of the machine, the respective motor and controlling circuits are tapped off; the multi-conductor cables for

NEW YORK & PENNSYLVANIA CO.

. . . *selects* Westinghouse



General view of new power plant at the Lock Haven Mill of the New York and Pennsylvania Company. Installation includes 2-4,000 Kw., Westinghouse automatic extraction turbines and surface condensers.

Close cooperation between customer and Westinghouse engineers produces new production economies.

● When the New York and Pennsylvania Company decided to revamp the power plant at their Lock Haven Mill, Westinghouse engineers were called upon to assist when the plans were still "on paper." The plant was laid out to use back pressures as low as possible to meet the process requirements. Also, to take advantage of the best vacuum which could be economically secured in order to maintain a constant heat balance. Every effort was made to secure economy — and results have exceeded expectations.

These same engineers, with long experience in the problems of the paper industry, are available to you for your steam and electrification problems. Call the Westinghouse office near you, or write Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. Address Dept. 7-N.

Westinghouse ELECTRICAL PARTNER OF THE PAPER INDUSTRY

the section interlocks and control circuits being provided with terminal boards in the duct for each section.

The machine operators have full control of the starting, inching, and stopping of the section motors at the front side of the machine at the respective sections. At the small operating station at the tachometer the operators increase or decrease the speed as desired. This control station changes the speed ratio of the mechanical transmission in the master set and develops a new reference frequency to the section interlocks and simultaneously adjusts the voltage produced by the main generator. This generator voltage is adjusted automatically in the interlock system to compensate for the current and torque demands of the section motors at all operating speeds. The most effective field strengths of these motors are maintained over the entire linear speed range and the section interlock regulators are not called upon to operate away from their mean operating positions for lack of correct voltage-speed relationship.

Designed for Special Requirements

The motors for the several sections have been carefully designed and tested to perform under the starting conditions and running load changes recognized for paper machine requirements.

The Moore & White four-drum rewinder is equipped with the Reliance Electric winder drive using an individual motor on each winder drum. This system of driving was developed originally in co-operation with the engineers of the New York and Pennsylvania Company.

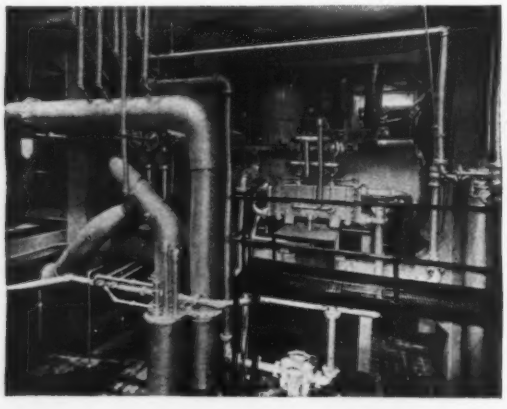
POWER STATION

The power plant is unique in design because it was built to be free of damage in times of high water. The turbines are 8 feet above the highest known water level and the condenser and auxiliary equipment below the turbines are inside a waterproof concrete box without openings for pipes or other equipment below any expected flood level. The turbines are installed in a section of the boiler room and a false ceiling over the turbines is suspended from the boiler room roof trusses and will withstand a load of 250 pounds per square foot. Above this ceiling are installed all the main control valves, reducing valves, etc. for the power installation and this has made an excellent layout in respect to accessibility and allowing plenty of room for installation of the numerous control equipments which are necessary. The speed control of the station to an absolute frequency of 60 cycles as controlled by the frequency equipment has been very satisfactory as a speed reference for the paper machine as well as supplying uniform speed for all the auxiliary equipment.

Installations in the Power House

Installed in the power house are:—one 5000 kw Westinghouse 600 volt 100 per cent power factor, 3 phase, 60 cycle, 3600 rpm. condensing single automatic extraction turbine generator, 175 lbs. gauge pressure, 477.5 degree F. total temperature with 15 lbs. automatic extraction pressure for paper drying and 28 inches vacuum with suitable direct connected exciter, and surface air cooler for the generator; one 5000 kw Westinghouse 600 volt 100 per cent power factor, 3 phase, 60 cycle, 3600 rpm condensing double automatic extraction turbine generator, 175 lbs. gauge pressure 477.5 degree F. total temperature with 40 lbs. automatic extraction pressure for the evaporators and heating and one pound automatic extraction pressure for feed water heating, and 28 inches vacuum with suitable direct connected exciter, and surface air cooler for the generator.

The turbines are designed so that 450 lbs. steam at 150 degree superheat may be utilized in the future by merely installing new nozzle block's for the high pressure stage.



A 5,500 Square Foot Surface Condenser With Two Stage Twin Element Air Ejector With Inter and After Surface Type Condenser.

Surface Condenser Suspended From Turbine

Each unit has a surface condenser directly suspended from the turbine and the condenser is of sufficient size to run each turbine at 28 inches vacuum when runing straight condensing at full capacity. Suitable auxiliaries such as a two stage twin element air ejector with surface type inter and after condenser, circulating and densate removal pumps are provided with each condenser.

The air to the turbine room is filtered through continuous air filters in order to insure cleanliness.

The circulating pumps are of the vertical propeller type with pumps submerged in water entering the plant by gravity thus eliminating any need for priming. The condensate pumps are two stage centrifugals.

Station Very Compact

The station is very compact and yet ample space is provided for removal of condenser tubes, cleaning and general maintenance. Space is provided for a third turbine when future developments require it.

The control system of the single extraction unit is so designed that when this unit operates alone, a governor speed compensator will restore the speed to within plus and minus 1 cycle of 60 cycles after any change in load or bled steam demand. The control

No Quarter Given!

A Beater hands out some pretty rough treatment—not only to the paper stack, but to the belt that drives it as well.

On Beater Drives in the New York & Pennsylvania Paper Company's plant at Lock Haven, Pennsylvania, *Research Leather Belting* is proving its mettle. It is helping N. Y. & P. to keep production costs down to an absolute minimum, because it is made to deliver more power and stand up longer on these tough drives.

***Research Leather Belting* receives no quarter from these Beaters—and it asks none!**

GRATON AND KNIGHT

Graton and Knight
RESEARCH BELTING
from the Home of Research, Worcester, Mass.

GRATON AND KNIGHT

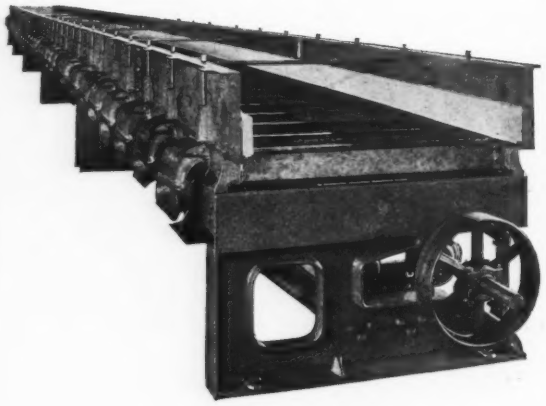
SIMPLICITY! NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

Vacuum produced by a Nash Pump is non-pulsating without equalizing tanks. Liquid entering the pump does no harm, even in slugs. Reliability and durability are inherent in the simple Nash construction, and these qualities are assured by superior material and workmanship.

THE NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

AT THE LOCK HAVEN MILL
of the
NEW YORK & PENNSYLVANIA CO.
A 12 PLATE IMPCO SCREEN IS IN DAILY USE—



IMPCO

PRODUCTS

Rotary and Flat Screen Knotters, Centrifugal Screens, Flat Screens with Dunbar Drive (metal and cypress vats), Vacuum Filters, including Save-alls, Washers, High Density Thickeners, Lime Sludge Filters, Black Liquor Washers, Forming Cylinders. Multiple Stage Counter-current Paper Stock Washers, Deckers, Wet Machines, including Hydraulic with High Density Vacuum Wet End. Thorne Bleaching Equipment. Pneumatic Water Filters, Cylinder Moulds, Laboratory Equipment, Special Machinery.

IMPROVED PAPER MACHINERY CORPORATION
NASHUA
New Hampshire

is designed so that when operating in parallel with the double automatic extraction machine or with other machines, it will maintain a constant load with changes in extracted steam demand.

As the speed of the main station is used to control the paper machine speed an extremely accurate frequency control has to be maintained. Carbon plate type voltage regulators are used with the direct connected exciters.

When the single automatic unit is operating alone, or being used to control the frequency, a three-way valve is used so that the control oil pressure to the main governor operating mechanism is from the governor speed compensator instead of from the extraction pressure regulator. Operating this way, the governor speed compensator changes the control oil pressure to the main governor operating mechanism after any change in load or in extracted steam demand to restore the speed. This compensator thus acts like an automatic speed changer to bring the speed back after any change in operating conditions.

When operating in parallel with other machines, the three-way valve is set so that the control oil pressure to the main governor is from the extraction pressure regulator. Operating this way, the extraction pressure regulator controls the position of the main governor operating mechanism to increase or decrease in extracted steam demand respectively so that the load remains essentially constant regardless of the extracted steam demand.

Speed Changer Motor

The governor of each turbine is furnished with a speed changer motor by means of which the load may be regulated from the switchboard. A Leeds & Northrup frequency controller is used on the switchboard and is connected so that it may operate the speed changer on one of the turbines if the frequency of the system varies more than a pre-set amount from the desired speed. Under all ordinary operating conditions, the governor speed compensator maintains the speed within such close limits that the controller does not have any effect on the turbine governor. It is, however, always available as a pre-emergency control in case some unusual conditions should be met under which the speed compensator did not maintain the frequency within the desired limits. The frequency controller enables the use of synchronous clocks throughout the plant.

An Elliott deaerating feed water heater and two Worthington single stage pumps coupled together and driven by a single 250 hp. Terry turbine operating under pressure control constitutes the main section of the boiler feed system. The first stage pump supplies the economizers and the second stage boosts the pressure to that required for the boilers. A duplicate pump installation having a single Westinghouse 250 hp. splash-proof thermoguard motor is also installed. No changes were made to the boilers except adding four superheaters not previously provided.

The feed water heater is supplied with five sources of water—three automatically and two manually controlled so that a continuous supply of water is available under all conditions, yet the layout is such that the condition of all supplies can be seen at a glance and any desired changes made from one station.

As it is essential to maintain continuous operation of the drives for the boiler feed pumps, circulating and condensate pumps, no overload or undervoltage devices are used in the motor controls. The thermo-

guard is arranged to signal over-temperature rather than to remove the motor from the line. This permits the operator to place standby equipment in service before removing the overheated unit, thus avoiding any forced dumping of steam or electrical loads. The control provides removal of motors only under short circuit or locked motor conditions.

As the voltage at the plant is 600 the current from each turbine is 5000 amperes and 6 inch copper channel has been used for the bus structure with bus type disconnecting switches. The arrangement has worked out very satisfactorily, giving a rigid and strong installation, particularly in the 60 foot run to the distribution switchboard.

The generator control panels are located on one side of the turbine room and the switchboard panels controlling the feeder of circuits on the opposite side with nine feeder circuits being controlled from each panel.

The entire power plant is laid out with a view to the use of as low back pressures as possible to meet the process requirements and takes advantage of as good a vacuum as could be economically secured as well as to maintain a constant heat balance. Considerable effort was devoted to securing economy and the results have exceeded expectations.

MACHINERY AND EQUIPMENT

The principal items of machinery and equipment were furnished by the following concerns:—

FOURDRINIER PAPER MACHINE:
Beloit Iron Works, Beloit, Wis.

CONCRETE PILES:
Raymond Concrete Pile Co., New York, N. Y.

BUILDING CONSTRUCTION:
John W. Ferguson Company, Paterson, N. J.

SECTIONAL ELECTRIC DRIVE:
Reliance Electric and Engineering Company, Cleveland, Ohio.

SPRINKLER TANK:
Chicago Bridge and Iron Works, Chicago, Ill.

TRAVELING CRANE:
Shepard Niles Crane and Hoist Company, Montour Falls, N. Y.

MOTORS:
General Electric Company, Schenectady, N. Y.
Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.
Louis Allis Company, Milwaukee, Wis.
Electric Machinery Manufacturing Company, Minneapolis, Minn.

WINDER DRIVE:
Reliance Electric and Engineering Company, Cleveland, Ohio.

DRAINERS AND STOCK CHESTS:
Kalamazoo Tank and Silo Company, Kalamazoo, Mich.

KALAMAZOO TILE TANKS

Two large drainers—18' 8" inside diameter. 24' 8" high with a stainless steel drainer bottom; installed at the New York & Pennsylvania Co., Lockhaven, Pa. Note small tile stock chests in background.

Developed by Paper Men
For Paper Mill Purposes

Located in the heart of the middle west paper industry, this company has studied paper mill problems for over 40 years.

Write us about your tank problems and our engineers will give you a quick, practical, and economical solution.

Manufacturers of wood tanks for 60 years.

GLAZED TILE

KALAMAZOO TANK & SILO CO.
KALAMAZOO, MICHIGAN

WOOD

STRUCTURAL STEEL:
Ingalls Iron Works Company, Birmingham, Ala.
VACUUM PUMPS:
Nash Engineering Company, South Norwalk, Conn.
PUMPS:
Warren Steam Pump Company, Warren, Mass.
Goulds Pump Company, Seneca Falls, N. Y.
Frederick Manufacturing Company, Frederick, Md.
PLATE SCREEN WITH CYPRESS VAT:
Improved Paper Machinery Corporation, Nashua, N. H.
WORM WASHERS:
Baker Manufacturing Company, Saratoga Springs, N. Y.
ROOF DECK SLABS:
Federal American Cement Tile Company, Chicago, Ill.
HOLOPHANE LIGHTING UNITS:
General Electric Supply Corporation.
SCALES:
Toledo Scale Company, Toledo, Ohio.
BRASS AND COPPER PIPE:
T. E. Conklin Brass and Copper Company, New York, N. Y.
BEATERS, JORDANS, ROTARY SCREENS:
E. D. Jones & Sons Company, Pittsfield, Mass.
SAND SETTLER AND OTHER WOOD TANKS:
G. Woolford Wood Tank Manufacturing Company, Philadelphia, Pa.
COUPLINGS AND SPEED REDUCERS:
Falk Corporation, Milwaukee, Wis.
GLASS BLOCKS:
Owens-Illinois Glass Company, Toledo, Ohio.
BEATER BELTS:
Goodyear Tire and Rubber Company, Akron, Ohio.
Graton & Knight Company, Worcester, Mass.
B. F. Goodrich Company, Akron, Ohio.
CORRUGATED WIRE GLASS:
Pennsylvania Wire Glass Company, Philadelphia, Pa.
VENTILATION AND MOISTURE ABSORPTION EQUIPMENT:
American Blower Company, Detroit, Mich.
SUPER CALENDER WINDER:
Cameron Machine Company, Brooklyn, N. Y.
DRAINAGE SYSTEM:
Fred C. Stamm, Lockport, N. Y.
ANTI FRICTION BEARINGS:
S.K.F. Industries, Inc., Philadelphia, Pa.
ALUMINUM SHEETS & SECTIONS:
Aluminum Company of America, Pittsburgh, Pa.
WINDER:
Moore & White Company, Philadelphia, Pa.
CALENDER ROLLS:
Farrel-Birmingham, Inc., Ansonia, Conn.
SYNCHRONOUS MOTORS AND CONTROL:
Electric Machinery Manufacturing Corporation, Minneapolis, Minn.
RUBBER LINED PIPE:
American Hard Rubber Company, Mercer, N. Y.
FABRICATED PIPE AND FITTINGS:
Taylor Forge and Pipe Works, Chicago, Ill.
FLAT ASBESTOS BOARD:
Keasby-Mattison Company, Ambler, N. J.

. . . Off come the rolls

QUICKLY AND SAFELY

EFFORTLESSLY, HEAVY ROLLS OF PAPER ARE LIFTED OFF THE SUPER-CALENDER MACHINES WITH ELECTRIC HOISTS AT THE NEW YORK AND PENNSYLVANIA COMPANY. SHEPARD NILES CAGE OPERATED MONORAIL HOISTS AND OVERHEAD TRAVELING CRANES ALSO SERVE OTHER DEPARTMENTS OF THIS COMPANY.

SHEPARD NILES CRANE & HOIST CORPORATION
378 SCHUYLER AVE.
MONTOUR FALLS, N. Y.

TURBINES AND CONDENSERS:
Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.
DEAERATING FEED WATER HEATER:
The Elliott Company, Jeannette, Pa.
SUPERHEATERS:
The Superheater Company, New York, N. Y.
CIRCUIT BREAKERS:
General Electric Company, Schenectady, N. Y.
BOILER FEED PUMPS:
Worthington Pump and Machinery Corporation, Harrison, N. J.
VALVES:
Chapman Valve Manufacturing Company, Indian Orchard, Mass.
Crane Company, Chicago, Ill.
Atwood & Morrill Company, Salem, Mass.
Swartwout Company, Cleveland, Ohio.
RECLAIMING AND CONVEYOR SYSTEM:
United Conveyor Corporation, Chicago, Ill.
MOTORS AND CONTROL EQUIPMENT:
Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.
General Electric Company, Schenectady, N. Y.
Allen Bradley Company, Milwaukee, Wis.
Cutler-Hammer, Inc., Milwaukee, Wis.
TRANSITE:
Johns-Manville Sales Corporation, New York, N. Y.
PIPE COVERING:
Charles S. Wood & Co., New York, N. Y.
PAINT:
Tung Oil Paint Manufacturing Company, Nyack, N. Y.
PIPING:
Crane Company, Chicago, Ill.
American Rolling Mill Company, Middletown, Ohio.
Warren Foundry and Pipe Company, New York, N. Y.
E. F. Keating Pipe Bending Company, Brooklyn, N. Y.
Taylor Forge & Pipe Works, Chicago, Ill.
GRATING:
Blaw-Knox Company, Pittsburgh, Pa.

ADDITIONAL NOTES ON THE EQUIPMENT

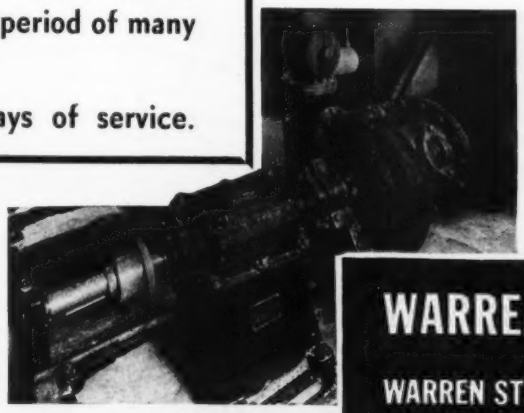
Shepard Niles Crane

Scheduled production is maintained in the new plant of the New York and Pennsylvania Company through the use of a Shepard Niles 15-ton 77 feet 8 inch span riveted box girder crane. The crane is equipped with two 7½ ton hoisting units with all travel movements controlled from the floor.

The bridge drive mechanism consists of a standard Shepard Niles back geared motor for the first reduction and one set of spur gearing for the second reduction. All gearing is completely enclosed and operates in an oil bath.

. . . *Warren built the Stock Pumps* Logical, of course, that Warren should furnish 11 pumps for the recent New York and Pennsylvania changes. Their mills have many Warrens—furnished over a period of many years.

Repeat orders are the okays of service.



WARREN PUMPS
WARREN STEAM PUMP CO.
INCORPORATED
WARREN, MASS.

Bridge truck ends are of the direct drive type. By releasing the truck axle box pin and lifting the truck slightly to disengage the axle box, the entire assembly, including axle, axle box and truck wheel, may be rolled out along the crane runway.

The hoisting units, commonly known as a crane trolley, is the heart of the crane. The load carrying frame is of steel throughout. Box section girts are of open hearth steel castings connected by a body piece of wrought steel plate which is securely welded to the girts and braced on the underside by gusset plates to provide additional resistance to distortion. This frame is carried by axle brackets of heavy seamless drawn steel tubing, which pass through bored openings in the girts.

In this installation the crane trolleys are propelled along the bridge girders by means of a hand chain drive. Ordinarily a motor drive is furnished affording a wide range of travel speeds.

All the well known principles of Shepard Niles design are embodied in the crane trolleys of this installation. Balanced drive gearing, straight line construction in units each separately accessible, and automatic oil bath lubrication are features that contribute to the positive, trustworthy day in and day out service.

Drainage Equipment

The drainage equipment for the new paper machine was furnished by Frederick C. Stamm, engineer, Lockport, N. Y., and was designed especially for this machine under the direction of the New York and Pennsylvania Company Engineering Department. Particular attention was given to the problem of getting flexibility without sacrificing simplicity.

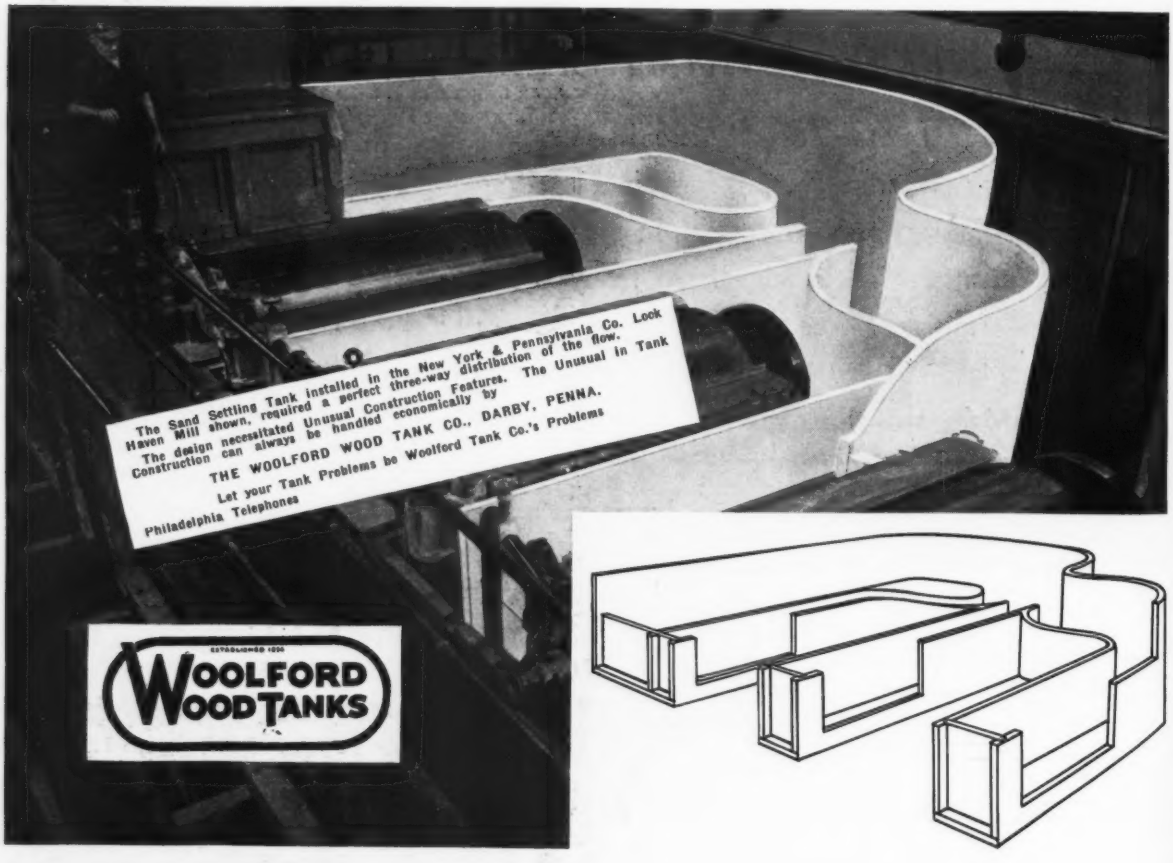
One small direct connected Wes-co pump handles the condensate from the entire machine and although certain sections are designed to operate as low as 10 inches of vacuum, no vacuum pump is used. Individual thermal compressors are used to take care of this condition.

Air from the entire machine is passed to the wet end where the Stamm air relief control automatically vents it to atmosphere. This control, which is a new development in the drying field, indicates the exact condition of the driers, and produces a chart which shows the amount of air which is being relieved from the machine.

The Stamm graduated temperature control is used to control the first four driers at the wet end and the first three driers after the size press. With this control, the backtender can quickly graduate the temperature of these driers to any degree he chooses and thus prevent picking at these critical points. This operation is easily controlled from a special panel board located on the front side of the machine. On heavily loaded papers this feature is a distinct advantage.

Tile Tanks

The Kalamazoo Tank and Silo Company, of Kalamazoo, Mich., installed a number of tile tanks. Included were four glazed tile drainers 18 feet, 8 inches I. D. x 24 feet 8 inches high with a 16 gauge stainless steel drainer bottom in each. The walls were


The Sand Settling Tank installed in the New York & Pennsylvania Co. Lock Haven Mill shown, required a perfect three-way distribution of the flow. The design necessitated Unusual Construction Features. The Unusual in Tank Construction can always be handled economically by
THE WOOLFORD WOOD TANK CO., DARBY, PENNA.
Let your Tank Problems be Woolford Tank Co.'s Problems
Philadelphia Telephones
WOOLFORD WOOD TANKS

jordans equipped with anti-friction bearings and 8 inches thick cutting down to 6 inches thick near the top, a floor being supported on this ledge. There were several stock chests varying from 12 feet O. D. to 16 feet O. D. and varying from 12 feet 6 inches high to 15 feet high. All of these were made with 6 inches thick walls. There also was a tile saveall 120 feet long x 14 feet wide by 8 feet high, the walls being 12 inches thick. There were also two broke chests which were 16 feet long x 7 feet 4 inches wide by 6 feet 8 inches high, these tanks being rectangular with one side half round and made of 6 inch tile. Tile lining was used to cover the bottoms of all these tanks.

Vickery Felt Conditioners

New York & Pennsylvania Company's new machine is equipped with Vickery felt conditioners on both the first and second press felts. These keep the felt as clean, soft and porous as new. They do this continuously, thus eliminating shutdowns for felt washings. The felts present clean, uniform surfaces to the sheet at all times and the moisture content of the sheet as it leaves the presses is reduced to a minimum and is constant. This makes for uniform drying as well as finish and results in important steam savings at the driers as well as faster drying.

Recognizing the value of clean papermaking rolls, the machine is thoroughly equipped with Vickery doctors. A Vickery hi-angle doctor on the breast roll keeps it at full efficiency without drag and takes the place of a shower at this point. Thirteen Vickery hi-angle doctors on the driers and two on the breaker rolls maintain the efficiency of heat transmittal at the highest point and effect substantial savings in steam as well as speed up drying. They keep the driers shining like a mirror at all times. Fourteen Vickery hi-flex doctors are employed on the calender stack and operate continuously rather than intermittently so that the rolls are kept as smooth and shiny as new and calender marks and scabs are not permitted to be a major cause of rejects as in so many mills. The drum reel is also kept continuously clean and smooth with a Vickery doctor.

Super Calender Winder

In connection with the super calender there has been installed at Lock Haven by the Cameron Machine Company, Brooklyn, N. Y., a hundred inch trim width, Camachine 46-9 super calender winder especially designed for winding uniform rolls of highly super-calendered paper.

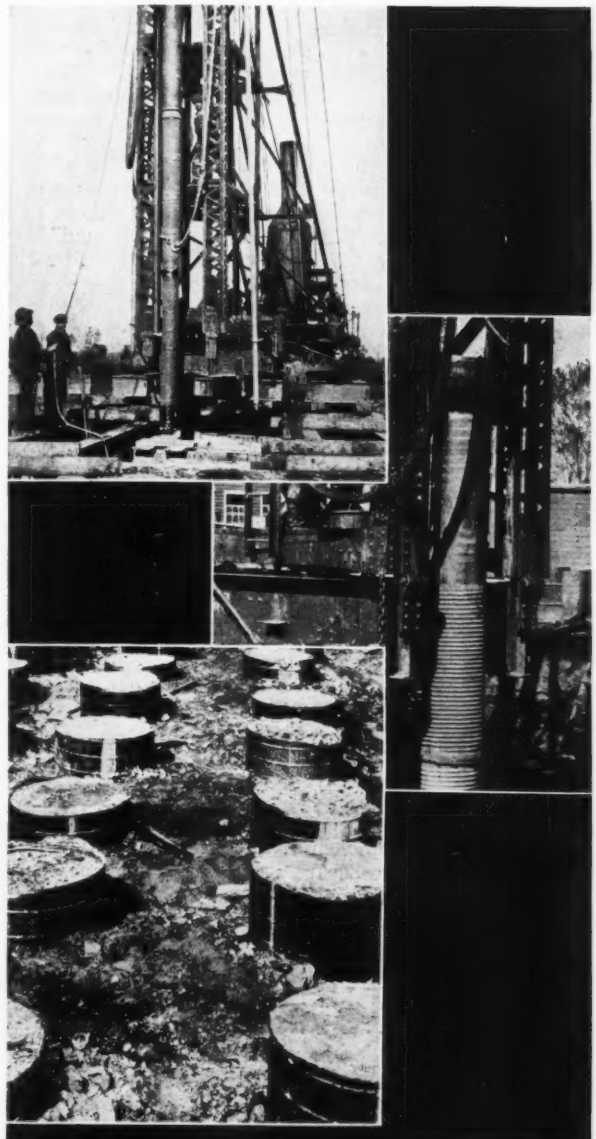
The calender drives the winder and a very sensitive control operated by the web of paper itself synchronizes the winder with the calender.

The original or mill roll may be 44 inches in diameter and the rewind capacity is 40 inches. A water cooled friction stand is connected to the mill roll shaft. The unwind or mill roll shaft bearings and the rewind shaft bearings are made so that one shaft will fit either. This permits the rewound roll to be passed through the super calender two or more times if required.

Jones Stock Preparation Equipment

The beaters, jordans and screens for the new unit were selected from a completely modernized and redesigned line of stock preparation equipment furnished by the E. D. Jones & Son Company.

In the new unit there are three new type Majestic



RAYMOND CONCRETE PILES
are absolutely dependable

as a foundation for permanent structures, particularly those housing heavy machinery which must preserve its alignment . . . because each pile is cast-in-place inside a corrugated steel shell which, left in place in the ground, preserves the driving resistance and support, thus preventing settlement.

RAYMOND CONCRETE PILE COMPANY
140 Cedar St., New York, N. Y.

Raymond

bronze filled for finishing the stock. Each jordan is equipped with a 350 hp. motor. This type of jordan has been newly designed to give heavy duty and long service and it has also been streamlined in line with modern machine practice to give a pleasing modern appearance to the installation.

In the new unit there are also four 2,000 lb. Jones high speed beaters equipped with bronze rolls and bed plates. The beaters are of the latest design to offer most efficient preparation of the pulp and all beater parts coming in contact with the stock are built of non-corrosive materials.

There are also three of the latest type Jones 40-inch rotary screens, all equipped with .012-inch cut plates, installed ahead of the machine to deliver clean and uniform stock. They are sturdy and efficient in appearance and operation giving low maintenance and accessibility for easy cleanups.

There is also one 2,000 lb. Jones broke beater of the latest design to handle all machine broke and trim on the new machine.

Warren Steam Pumps

The following pumps were furnished by the Warren Steam Pump Company, Inc., Warren, Mass., for the new unit at Lock Haven, Pa.

No.	Types	Handling	G.P.M.	Head	Speed	Motor Size & Make
2	8-DMO-11½	6 per cent stock mixed	1700	85	1150	60 HP. Westinghouse
2	8-SOD-17	5½ per cent stock	200	60	1150	15 HP. Westinghouse
2	4-SOD-16½	Raw Water	1500	20	875	10 HP. G. E.
2	2-S-14		400	40	1150	7½ HP. Westinghouse
1	4-SOD-16½	3 per cent-6 per cent	600	80	1150	20 HP. G. E.
1	4-DS-13	Water	500	100	1750	20 HP. G. E.
1	5-DS-11		500	15	875	3 HP. Westinghouse

Sirocco Hood System

In solving the problem of absorbing and removing the moisture liberated from the paper machine the Sirocco hood system was chosen. This has many advantages as it confines the liberated vapors and isolates the machine from the room forming a large suction chamber drawing air from the machine room uniformly through the paper machine and exhausting this humid air through high efficiency exhaust fans to atmosphere.

The supply system is located entirely separately on the machine room roof in pent houses. Here the air is drawn through automatically controlled heater coils then filtered with a continuously self-cleaning filter then reheated to a pre-determined temperature automatically controlled. This is then discharged into the machine room at low velocity, distributing uniformly over the room without draft flowing towards the hooded machine.

In addition the machine roof is blanketed with automatically controlled roof warmers which take room air, raise the temperature approximately 10 degrees and spread this reheated air over the roof surfaces.

The system permits complete accessibility to the machine, entirely eliminates duct work, high velocities and high temperatures, there is no possibility of drip, and the working conditions of the machine room are greatly improved as lower temperatures and humidities can be maintained without draft.

Due to the fact that no duct work is used it is economical to use large air volumes and due to the isolation of the paper machine the supply air can be introduced at lower temperatures and while there is a considerable saving in steam for air heating purposes there is also a power saving due to transmitting the air at low velocity without duct work.

Iowa Paper Merchants Meet

At the call of President J. C. Meyers, Carpenter Paper Company, Des Moines, a meeting of the Iowa Paper Merchants Association was held on October 20 at Hotel Fort Des Moines, Des Moines. Secretary R. B. Wixson of Sioux City functioned with his usual painstaking efficiency.

The meeting was held in connection with a visit of A. R. Jackson, Wrapping Division Secretary of The National Paper Trade Association, who addressed the members at some length regarding National activities, plans for membership promotion and constructive programs discussed at the recent Semi-Annual Convention in Chicago. He emphasized especially the importance of a representative National organization to promote sound practices among manufacturers as well as merchants and most intelligently meet various forms of competition arising outside the paper trade; also to represent the trade as a whole in meeting its problems under legislation and Governmental control. He also pointed out the necessity of local cooperation in building up the membership so as to include all responsible paper merchants operating in the state.

General discussion on topics of local as well as National interest with a frank interchange of views and experience was participated in by the officers above mentioned, and A. D. Riley and J. H. Misner, Pratt Paper Company, Des Moines, W. P. Peterson, Davenport, R. R. Epler, Cedar Rapids, M. F. McFarland, Keokuk, C. W. Dau, Des Moines, and others.

Northwestern Paper Merchants Meet

In connection with a visit of A. R. Jackson, secretary of the Wrapping Division of The National Paper Trade Association, a meeting of the Wrapping Division members of the Northwestern Paper Trade Association was held in Minneapolis, October 19, at the Nicollet Hotel. There was an exceptionally good attendance of sixteen representatives from ten different paper houses in the Twin Cities, including President W. I. Nelson, Vice-Presidents A. G. Pringle and H. C. Rogers, and Secretary W. O. Hawkins. Special assistance in the arrangement of the meeting and handling the program was given by H. A. Hartinger who represents the Northwestern Association on the Wrapping Paper Governing Committee and Board of Directors of The National Paper Trade Association.

Ontario Paper Men May Form Association

One Hundred and Fifty Officials and Employees of Pulp and Paper Mills In Northwest Ontario and Manitoba Contemplate Forming Association —Log Cut Reduced This Season—Labor's Share In Cost of Distribution.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., October 31, 1938—Some hundred and fifty officials and employees of pulp and paper mills from the Lakehead and points west assembled in Port Arthur, Ont., recently to enjoy an informal dinner and ascertain the advisability of forming an association of Northwestern Ontario and Manitoba mills so that periodical, get together meetings might be held and various matters pertaining to the manufacture of pulp and paper discussed. A committee was appointed as follows:—E. L. Goodall, Provincial Paper, Limited, Port Arthur (Chairman); Frank Brown, Thunder Bay Paper Company, Port Arthur; George Hamill, Abitibi Power & Paper Company, Fort William; Norval Hunter, Great Lakes Paper Company, Fort William; Alex Johnson, Provincial Paper, Port Arthur; E. J. Carriveau, Fort Frances Pulp and Paper Company, Fort Frances; S. C. Stratton, Kenora Paper Mills, Kenora and N. Howe, Dryden Paper Company, Dryden. This committee will meet at an early date and when arrangements are formulated, another gathering will be held and election of officers take place.

Address on Printability of Paper

The chairman of the dinner at the Port Arthur hotel was A. G. Pounsford, manager of Provincial Paper. The meeting was arranged through Dr. G. I. Hoover, chairman of the Research Committee of the Technical Association. The speaker of the evening was Dr. G. L. Larocque, formerly of the Forest Products Laboratories, Montreal, but now with the Rolland Paper Company, Mont Rolland, Que. He gave an instructive address on "Printability of Paper" which was illustrated with lantern slides. The three principal processes, letterpress, litho or offset and gravure were used, he said, with different qualities of paper, with the letter press method being more widely employed. There was shown the difference between the coarse screen or dot structure used in newspaper pictures and the finer screen of magazine pictures while examples of high speed rotary presses were also shown. The difference in paper finishes between such papers as newsprint and book paper were described and the effect of these finishes in the various types of printing discussed.

Work of Montreal Technical Laboratory

Dr. Boyd Campbell, technical adviser of the Canadian Pulp and Paper Association, described the work of the Laboratories in Montreal. He said that they were operated to find out what is possible of the fundamental properties that go to make paper. While they studied those things, it was not their job to make paper. It was the job of the manufacturers to produce paper and anything that the Laboratories could do to assist in that line was the work of the institution with which he was connected. The Laboratories tried by working in cooperation to do something to aid the paper maker. Differences between Northwestern Ontario newsprint and that from the province of Quebec were discussed. Dr. Campbell expressed the opinion that the high density wood used in Northwestern Ontario was the principal cause in producing a paper which was more transparent than that turned out in Quebec.

Log Cut Smallest in Years

Hon. Peter Heenan, Minister of Lands & Forests for Ontario, recently returned from an extended trip throughout the northwestern part of the province. He says that the log cut this season will be one of the smallest in recent years. A survey of the timber areas revealed the fact that pulp and paper companies and lumber mills overcut far beyond their needs last year, and as a result their yards were filled in many cases with enough stock to last them the entire winter. When operations were commenced in the fall of 1937, market conditions were particularly favorable, and operators carried out contracts on the basis of the market, which dropped off both in pulpwood and lumber. The result is rather heavy holdings. Conditions were about the same in other areas of the province, and in Kenora, Rainy River or Thunder Bay district, there is not likely to be much development in pulpwood operations.

Labor's Share in Cost of Paper

A recent illustrated booklet on the pulp and paper industry of Canada shows a distribution of the cost of paper. Workers get 15.36 cents of every dollar while 6.15 cents goes for administration. This is to say that wages and salaries amount to 21.51 cents in each dollar of gross production value. This is a large sum in the industry amounting in 1936 to $40,063,000 and no other industry in Canada, with the exception of the railways, has a payroll of comparable size. There are other enterprises which spend a larger sum of their production dollar for wages and salaries.

The sawmills for instance disburse 26 cents of each dollar in that way and the printing and publishing business 41 per cent.

Automatic Strainer

The Blackburn-Smith automatic self cleaning strainer is described in a leaflet issued by The Blackburn-Smith Manufacturing Company, Inc., 310 Twelfth street, Hoboken, N. J. The company states that it needs no attention, is fully automatic and is of particular value where it is impractical or too costly to service conventional types. The strainer handles large volumes of water, various processing liquids, oils, etc., not corrosive to cast iron and bronze. As the cleaner only cleans when it is necessary, as governed by the pressure drop due to accumulation of dirt in the basket, the cost of operation is claimed to be nominal.

Chicago Market Reports Improved Demand

Midwest Paper Trade Encouraged As Orders For Week Show Definite Uptrend — Federal Reserve Reports On Employment and Earnings — National Paper Trade Association Enrolls New Members—Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., October 31, 1938—Despite unseasonal weather and some slight uncertainty along certain lines, the paper trade in and around Chicago gave a favorable account of itself during the week. Demand was reported as definitely better while those lines of business depending directly upon general business improvement indicated a better tone. Specifically, the markets were little changed during the week. Krafts continued to circulate in a very narrow range from a price standpoint, a range sufficiently narrow as to give indication of an appreciable amount of general stability. Tonnage was reported good with the mills 90 per cent operating according to reports. Sulphites were steady with eyes on the New York meetings to be held this week. Books and covers were little changed though the undertone was reported as stronger. Newsprint markets were fairly active and ground wood mill representatives also reported a more widespread demand. Building papers were stronger. Waste papers continued to firm up with a far healthier position in sight than was current a few weeks ago.

Federal Reserve Reports on Employment

The paper and printing industry in the seventh Federal Reserve district held its own during the month as far as the number of wage earners is concerned but suffered a 2.1 per cent decline in earnings according to figures released this week through the district which includes Iowa, Wisconsin, Illinois, Michigan and Indiana. The 743 reporting paper and allied firms showed a total of 71,671 wage earners with earnings of $1,967,000 for the week of September 15 as compared to the same period in August. The number of wage earners remained the same while the earnings represented a 2.1 per cent decline. The total for the entire manufacturing group was far above the paper record where number of wage earners showed an 8.9 per cent increase and earnings an 11 per cent improvement.

N.P.T.A. Enrolls New Members

The successful Fall meeting of the National Paper Trade Association stirred the cooperative interests of a large number of new members who were enrolled during the past month. Included in the list were Chicago firms including J. Chukerman & Sons; Levin Bros. Paper Company, both of Chicago and the Pilcher Paper Company organization of Joliet, Illinois. The firms will be identified with the broad wrapping paper program of the parent organization, all having taken an active part in the work of the local Chicago Paper Association.

Champion Adds New Coated Paper

The Chicago offices of the Champion Paper and Fibre Company are meeting with a considerable amount of success in the introduction of "Namelo", a new printing paper which is casein coated according to a special process and then super calendered. The paper comes in standard sizes and in 50, 60 and 70 pound basis.

Lakeside Purchases Iowa Plant

From the western part of the State comes news that the Davenport, Iowa, plant of the White & Wyckoff Manufacturing Company has been sold to the Lakeside Central Company, a subsidiary of Bradner Smith & Company, well known Chicago paper jobbing firm. The Lakeside unit will continue to operate the Davenport plant, manufacturing school supplies and stationery.

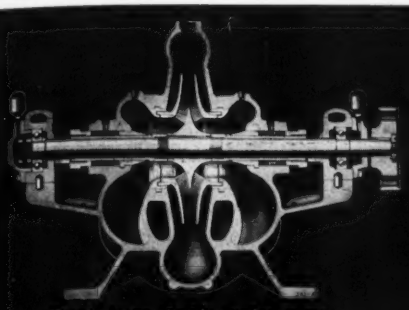
Wisconsin Paper Merchants Meet

The Wisconsin Paper Merchants ssociation held a meeting at the Pfister Hotel, Milwaukee, on October 24, 1938. The meeting was called by Mr. Harry Newton, President of the Association and was well attended. Among the members present were the following: J. S. Addison, Service Paper Company, Racine, Wis.; Fred Boyce, Wisconsin Paper and Products Company, Milwaukee, Wis.; W. P. Crowley, General Paper & Supply Company, Madison, Wis.; John Forester, Standard Paper Company, Milwaukee, Wis.; F. X. Grode, Grode and Nash Paper Company Inc., Nekoosa, Wis.; Charles Hafeman, Hafeman Paper Company, Milwaukee, Wis.; Ed. Kaas, Val Blatz Paper Company, Milwaukee, Wis.; Mrs. G. K. Kullman, American Paper Company, Milwaukee, Wis.; R. H. Kurth, Paper Specialty Company, Wausau, Wis.; L. J. Marshall, Marshall Paper Company, Appleton, Wis.; Harry Newton, American Paper Company, Milwaukee, Wis.; H. Sielaff, Sielaff Paper Company, Milwaukee, Wis.; E. C. Sprenger, Sprenger & Sons Company, Milwaukee, Wis.; Lee Stevens, Flint Paper Company, Milwaukee, Wis.; Harry J. Voelker, W. H. Kranz Company, Racine, Wis.; J. M. Williams, A. E. Sielaff Paper Company, Milwaukee, Wis.

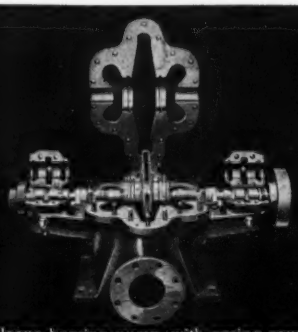
A. R. Jackson, secretary of the Wrapping Division of The National Paper Trade Association was also present at this meeting.

The program was very interesting and included a very informative talk by O. A. Dole on the many phases of insurance. The matter of recruiting the Wisconsin association to more near one hundred per cent making it entirely representative of the trade in that territory was discussed, and definite plans made for carrying out an intensive drive for membership in the territory covered by this association. Local conditions and other problems were discussed thoroughly and considerable attention was also given to a program for a salesmen's training course.

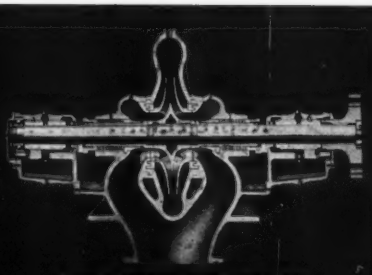
The members of the Wisconsin Paper Merchants Association are enthusiastic about their program for the future and expect some real results along the lines discussed at the meeting.



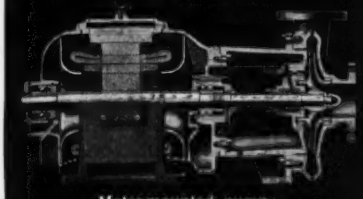
Single stage, double suction pump with ball bearings.



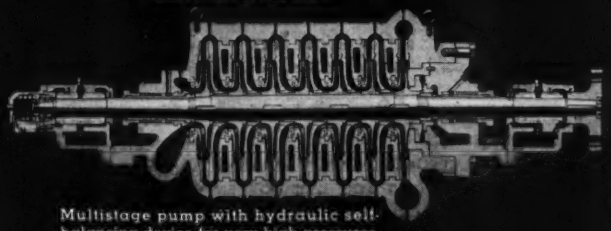
Sleeve bearing pump, with casing cover and bearing caps lifted.



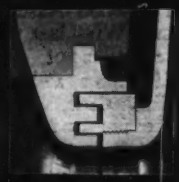
Sleeve bearing pump with ball thrust bearing.



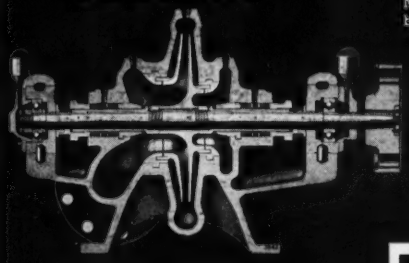
Motor-mounted pump.



Multistage pump with hydraulic self-balancing device for very high pressures.



Labyrinth wearing rings for reducing leakage from discharge to suction of centrifugal pump.



Single stage, single suction pump.

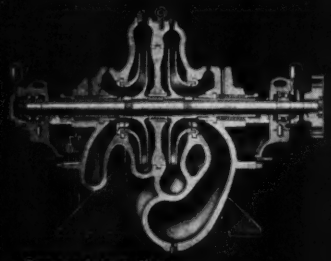
PUMPS FOR ALL PURPOSES

De Laval Centrifugal Pumps are characterized by high efficiency and exceptional reliability, obtained by scientific design based on exhaustive development and tests, by the use of the most suitable materials, and by precision manufacture on a limit gage, interchangeable basis.

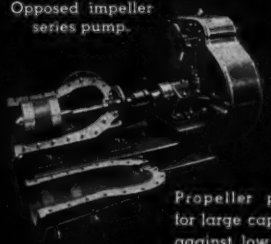
The casing is split in the horizontal plane of the shaft and internal parts are accessible and removable upon lifting casing cover and bearing caps. At all points subject to wear the main pump parts are protected by renewable wearing parts, the most important of which are the labyrinth rings which reduce leakage from discharge to suction, while permitting ample mechanical clearances.

Each pump is guaranteed as to mechanical perfection and operating characteristics and is tested before shipment from the De Laval Works.

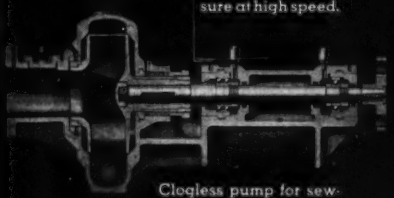
State your pumping requirements fully and appropriate literature, with suggestions concerning the most suitable type and arrangement of pumping equipment, will be sent.



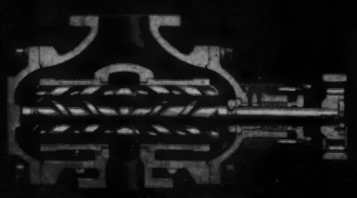
Opposed impeller series pump.



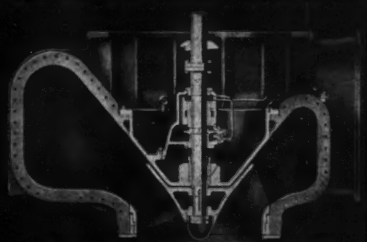
Propeller pump for large capacity against low pressure at high speed.



Clogless pump for sewage, wood pulp, etc.



De Laval-IMO rotary displacement pump for oil.



Mixed flow pump for large capacity against low heads at high speed.

3207

DE LAVAL STEAM TURBINE CO., TRENTON, N. J.

Lake States Mills To Conserve Pulpwood

Representatives of Pulp and Paper Industry In Lake States Section Meet At Wausau To Form Program For Conservation of Pulp Wood Resources In Three States—E. W. Peterson Elected Chairman—Other Trade News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., October 31, 1938 — Approximately fifty representatives of the pulp and paper industry from the Lake States section of the American Pulpwood Association met at Hotel Wausau, Wausau, Wis., last week to formulate a program for conservation of pulp wood resources in Wisconsin, Michigan and Minnesota. William Good of New York City, secretary of the association, directed the meeting and Perry M. Wilson acted as chairman.

An explanation was given of the plans of President Roosevelt for a congressional committee to investigate the nation's forestry resources in relation to industry, consisting of five senators and five representatives. Hearings are being held, the first of which was during the annual convention of the National Association of State Foresters at Boise, Idaho.

Expressions as to the situation and its remedies were given by a number of those present. J. D. Mylrea of Rhinelander, Wis., said a pulp wood shortage is apparent within ten years, meaning some ghost towns in Wisconsin because of withdrawal of mills to other localities, unless something is done.

F. G. Kilp, forester for the Nekoosa-Edwards Paper Company, Nekoosa, Wis., explained how his company took marginal lands out of agriculture a number of years ago and planted them to timber. He pointed to good fire protection as one of the major needs in order to conserve the existing timber.

Another speaker was S. B. Bugg, general manager of the Tomahawk Kraft Paper Company, Towahawk, Wis., who said the raw material problem is most complex, and involves such other factors as coordination of freight rates. He questioned whether the attempts of his and other mills to obtain pulp wood supplies through reforestation will enable them to meet with foreign competition. His suggestion was that the pulp industry secure the cooperation of counties now holding cutover land in releasing of timber on those lands for industry's use.

Effects of Destructive Competition

Pointing out that destructive competition means the squandering of pulp wood resources, N. S. Stone, general manager of the Mosinee Paper Mills Company, Mosinee, Wis., saw a possible remedy in a tax on imports. G. E. Marshall of the Northwest Paper Company, Cloquet, Minn., said Minnesota and national regulatory bodies are conceiving the idea that industry should purchase its supply of raw materials from federal and state forests. Regulation should come from the paper mill men themselves, he declared.

Selective cutting and its benefits were explained by O. T. Swan of Oshkosh, Wis., secretary of the Northern Hemlock and Hardwood Manufacturers' Association.

Sentiment at the meeting showed preference for state rather than federal regulation. One suggestion was for long-term bonds by which the state would be able to reforest lands and amortize the cost over a period of years until the timber could mature and be sold. The need of greater fire protection, removal of isolated farmers from forest areas, disposal of slash, competition of quick-grown timber of the south, and the advantage held by superior types of wood obtained through importation were among the other subjects treated.

Co-operation of Industry Praised

Dealing with the same subject, F. G. Wilson, superintendent of forestry for the Wisconsin Conservation Commission, issued a report last week praising Wisconsin pulp and paper companies for their cooperation in carrying out reforestation. The report reveals that pulp and paper companies of the state now have 9,000 acres of successful forest plantation, placing Wisconsin second only to Louisiana in this respect. In the field of municipal planting, Wisconsin counties are credited with 6,135 acres out of 11,632 for the entire United States.

E. W. Peterson Elected Chairman

E. W. Peterson of the Mosinee Paper Mills Company, Mosinee, Wis., was chosen as chairman of the Northwest section of the American Pulp and Paper Mill Superintendents Association at its fall meeting at Madison, Wis. October 22. Frank Pilot of Neenah, Wis., was eligible for chairman but declined the office. Other officers elected were: Louis Dozier, Rhinelander Paper Company, Rhinelander, Wis., first vice-chairman; Russell Leroux, Interlake Pulp and Paper Company (division of Consolidated), Appleton, Wis., second vice-chairman, and George H. Urban, Marathon Paper Mills Company, Rothschild, Wis., secretary-treasurer.

The program included talks and discussions on technical problems and a visit to the United States Forest Products Laboratory, where constant experimenting is going on to find new woods for pulp and improvement of present processes. A banquet was held in the evening at which Clarence E. Jackson, mill manager of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., was the toastmaster.

Kimberly-Clark Aids Employee Education

Kimberly-Clark Corporation, Neenah, Wis., believes in encouraging education of its 4,500 employees in seven mills as a means of self-improvement and in order to carry out its axiom, "Kimberly-Clark's success is proportional to the skill, craftsmanship and ability of all its employees." The company, according to Charles Eubank, director of the industrial relations department, works under the assumption that its investment in man power is its greatest investment.

Many of the employees attend classes in the vocational schools at Neenah, Menasha, Appleton, Kimberly and Niagara, Wis., taking up subjects relating

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to pulp and paper making and other practical phases of the industry. The company cooperates in selecting suitable courses and in supplying instructors. Still others avail themselves of correspondence courses in the extension division of the University of Wisconsin. Where a course has been approved as to its value to the employee in improving his particular job, the company reimburses him for half of his tuition.

An "understudy" plan is also used with students from colleges. Approximately 100 of them have been given an opportunity to work in various departments in order to gain technical knowledge, and also so that the company can observe their fitness for later permanent employment. A plan is in operation now using 30 students from Antioch college. These young men and women work on production jobs for ten weeks and then attend school for ten weeks while others take their places.

Much also is done by the executives and department heads to give workers training to improve themselves, develop latent ability, bring out the strong points and correct the weak ones, thus enabling them to do better work and win promotions.

First-Aid Training at Gilbert Company

Foremen, supervisors and others employed at the Gilbert Paper Company, Menasha, Wis., are meeting one evening a week to take first aid training. The classes are made up of approximately thirty men, and were arranged by the Menasha vocational school, with Lee Palmer of Appleton, Wis. as the instructor. The purpose is to familiarize them with the treatment to administer in various emergencies that might arise in the mill, and to foster better care of minor injuries.

Nicolet Adjusts Wages and Hours

Negotiations were in progress last week at the Nicolet Paper Corporation, De Pere, Wis., to readjust hours and wages to meet the new federal wage-hour requirements. Workers were represented by Frank J. Heinz, president of Local 62 of the International Brotherhood of Paper Mill Workers. He proposed a 44-hour week, with time and a half for overtime if the mill is operated on a 48-hour week basis. The company advocates a 40-hour week plan, with a floating shift of workers that would require 18 or more new men in the mill while operating at practically the same cost. Union officials contended this would mean the loss of eight hours per week to present workers. The problem is being worked out on a friendly basis.

Fiers-Babina Nuptials

John Fiers of the engineering department of Kimberly-Clark Corporation, Neenah, Wis., and Miss Margaret Babina of Appleton, Wis., were married October 27 at St. Mary Catholic church at Appleton. They will make their home at Kimberly, Wis., since Mr. Fiers is in the office of the Kimberly mill.

Knight, Allen & Clark To Move

BOSTON, Mass., October 31, 1938.—The firm of Knight, Allen & Clark, Inc., is to remove to larger and more desirable quarters at 275 Congress street about November 15. The present address is 295 Congress street.

Union Baggers Establish Record

The Union Bag and Paper Corporation's baseball nine, known as the "Union Baggers" has established what is believed to be a world's record this season. The team scored thirty-six consecutive victories, which has earned for them a reputation as one of the greatest semi-pro teams on record.

This record is all the more noteworthy because this is only the second year of the organization of the "Union Baggers." All of the players are regular employees in Union's Savannah mill, where they work

UNION BAG BASEBALL NINE

in the paper mill or bag factory. While some of the members of the team are former professional ball players, all play for the love of the game.

During the season, the team faced the best semi-pro teams in the South. While they started the season with six defeats in their first eight games, two of the defeats were at the hands of the Atlanta Crackers, 1938 pennant winners in the Southern Association and two others by the national champions from Buford, Ga. The team avenged these early defeats with the unusual record of thirty-six straight victories, including some of the leading teams in the South.

The "Union Baggers" were well on their way to the thirty-seventh victory, when the Fernandina Paper and Pulp team staged a ninth inning rally to take the last game of the season. Plans are already under way for a busy season next year, when the team has expectations of breaking its present unusual record.

J. H. Allen, manager of the Savannah operations for Union Bag, has been one of the most interested and enthusiastic rooters for the team. G. T. Wagner, business manager of the team, is already negotiating for interesting games to be played during the Southern Paper Festival in April.

Goes with Knight, Allen & Clark

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 31, 1938.—John C. Hurd, executive secretary of the New England Paper Merchants Association, since 1936, who recently resigned his position, effective November 1, has joined the organization of Knight, Allen & Clark, Inc., in executive and saleswork. Miss A. Atwood continues as office secretary and will be assistant treasurer.

Dilts

Announcing

COWLES VERTICAL CLASSIFINER

What every board mill has been waiting for. A new vertical screen for paper machine screening, developed and built by Dilts. Compact — efficient — economical.

ECONOMY

A saving of 75% in floor space can be effected with this new vertical screen. Operates at relatively low speed, thus reducing wear, maintenance and power.

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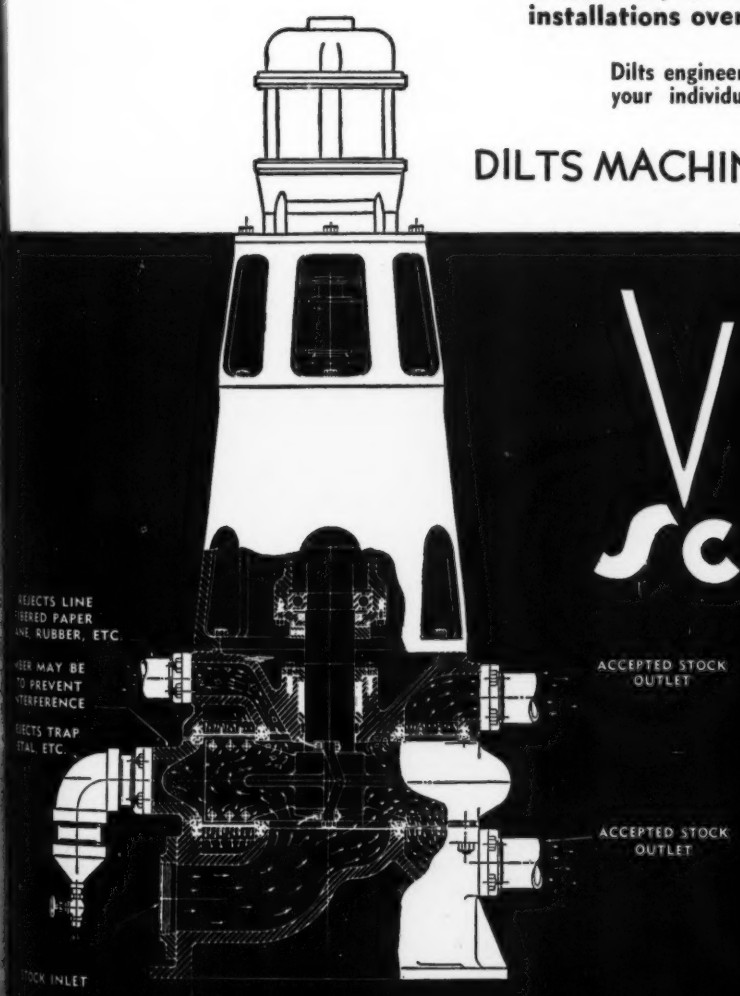
The impellor design makes for an efficient centrifuging action. A seven month period in a leading board mill, under strict observance, has proved the efficiency and economy of this new vertical Classifiner. It promises to be as outstanding in performance as the original Cowles Classifiner, of which there have been more than 30 installations over a period of 3 years.

Dilts engineers will be glad to consult with you on your individual requirements. Write for details.

DILTS MACHINE WORKS, INC. FULTON, N.Y



VERTICAL SCREENING

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FULTON, N. Y.

Financial News of Pulp and Paper Industry

Union Bag Earns $203,266 In Third Quarter—Stockholders of the Keith Paper Co. Discuss Plan For Refinancing—Sutherland Paper Co. Reports $506,491 For the First Nine Months—Gair Reports Net Loss of $37,946.

NEW YORK STOCK EXCHANGE

High, Low and Last for the Week Ending, November 2, 1938

	High	Low	Last
A. P. W.	3½	3⅛	3⅛
Armstrong Cork Co.	48¼	44½	48¼
Celotex Corp.	30⅛	28⅝	29
Celotex Corp., pf.	69½	69	69
Certain-Teed Products Corp.	12⅜	11⅛	11¾
Certain-Teed Products Corp., pf.	45¾	42⅜	44
Champion Paper & Fibre Co.	30¾	29	30
Champion Paper & Fibre Co., pf.	100	99	99
Congoleum-Nairn Co.	27⅝	27	27⅛
Container Corp. of America	17⅜	15¾	16⅜
Continental-Diamond Fibre Co.	11¼	10	10¾
Crown-Zellerbach Co.	14⅞	13⅞	14
Crown-Zellerbach Co., pf.	89	86⅞	89
Flintkote Co.	28½	26⅜	27⅝
Robert Gair	5¼	4⅜	4⅜
Robert Gair, pf.	15½	14½	14½
International Paper & Power	14⅝	13	14
International Paper & Power, pf.	51¼	48½	50⅛
Johns-Manville Corp.	103¾	99½	102½
Johns-Manville Corp., pf.	127½	126¾	127
Kimberly-Clark Corp.	27½	27	27
MacAndrews & Forbes	29½	29½	29½
Masonite Corp.	58¼	56¾	56¾
Mead Corp.	14⅝	13½	13½
Mead Corp., pf.	68½	68½	68½
Paraffine Companies, Inc.	58⅜	57	58⅜
Ruberoid Co.	32⅞	29¾	31⅞
Scott Paper Co.	49½	48½	49¼
Sutherland Paper Co.	31	30½	30½
Union Bag & Paper Corp.	14⅜	13¼	13⅜
United Paperboard Co.	8⅜	7⅜	8
U. S. Gypsum Co.	109¼	106¾	108½

NEW YORK CURB EXCHANGE

High, Low and Last for the Week Ending, November 2, 1938

	High	Low	Last
American Box Board Co.	11½	11½	11½
Brown Co., pf.	26	23	23
St. Regis Paper Co.	4⅛	3⅞	3⅞
St. Regis Paper Co., pf.	71	71	71
Taggart Corp.	6⅛	5¾	6

Union Bag Earns $203,266

In spite of more than a 25 per cent drop in paper bag prices under the 1937 average, Union Bag and Paper Corporation in the third quarter this year earned net profit of $203,266, approximately equal to the $206,986 earned in the second quarter this year, Alexander Calder, president, reported in connection with the operations of the company for the quarter and 12 months ended September 30, 1938.

Third quarter earnings were equal to 19 cents per share on the 1,052,274 shares of capital stock now outstanding as compared with 45 cents per share on the basis of the same number of shares in the third quarter a year ago when the company was able to report net profit of $469,194 in response to production shortage in the industry and nearly 32 per cent higher prices.

During the third quarter the price of paper bags dropped more than 25 per cent from the average price of 1937, and was approximately 24 per cent lower than the average price over the last four years, Mr. Calder said. In spite of these much lower price levels the corporation's dollar sales for the first nine months of 1938 are running 3 per cent ahead of its 1937 rate of sales, he added.

For the 12 months ended September 30, net profit was $1,109,974 or $1.05 per share on the total number of shares outstanding. This compares with net income of $1,360,129 or $1.29 a share (on 1,052,274 shares) in the preceding 12 month period ended September 30, 1937. Profits subject to year-end adjustments, were after depreciation, interest and all other charges, including estimated Federal income and capital taxes, but before allowance for surtax on undistributed profits.

"The kraft industry has shown a remarkably steady volume rise throughout the year," Mr. Calder stated, "and while prices usually lag behind volume, the fact that industry shipments during the third quarter exceeded the 1937 average would seem to forecast more profitable price levels in the near future."

Keith Paper Co. To Refinance

TURNERS FALLS, Mass., October 29, 1938—Announcement was made this week of a plan for refinancing the Keith Paper Company under the management of the Deerfield Glassine Company management and with new funds in the sum of $375,000. The stockholders will meet here October 31 to authorize the plan and to give specific authorization to a loan of $250,000 from the RFC, $50,000 each from the First National Bank and Trust Company of Greenfield and the Merchants National Bank of Boston and $25,000 from the Turners Falls Power and Electric Company.

The plan which has been worked out by Attorney Charles N. Stoddard of Greenfield, counsel for the paper company, will, if approved, provide for five trustees; two to be appointed by the RFC, one each by the two banks, and the fifth will be Douglas Crocker of Fitchburg, present director of the Keith company.

Brown Corporation in Forward Move

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., October 31, 1938.—The Brown Corporation, of Portland, Me., which has a sulphate pulp mill at La Tuque, Que., with capacity for the production of 600,000 lbs. per day of bleached and unbleached Kraft fiber, is joint owner with the Shawinigan Water and Power Company of the St. Maurice Power Corporation. This latter company has just placed an order with Dominion Engineering Company of Montreal, for the manufacture of four hydraulic turbines for installation at the corporation's power development at La Tuque, on which construction work is progressing rapidly. The order is understood to involve a sum in excess of $500,000, and delivery of the turbines will commence in the spring of 1940.

These turbines will be capable of generating 40,000 horsepower each at 104 ft. head, 112½ r.p.m. At the powerhouse substructure, on which work is now progressing, provision is being made for future installation of two additional units of equal capacity, so that this

development when completed will provide in all for an additional 240,000 horsepower to the Shawinigan system. It has been estimated that the La Tuque project will represent an investment when completed of some 12 to 13 million dollars.

Mersey Paper May Expand

Another step forward for the Mersey Paper Company, of Liverpool, N. S., has just been taken by the bringing into commission a new 10,200 h.p. power development at Comie Falls, by the Nova Scotia Electric Power Commission. It is expected that the Mersey Paper Mill, originally built to produce 72,000 tons of newsprint annually, will increase facilities for an output of 110,000 tons per annum. Hon. A. S. MacMillan, chairman of the Power Commission, speaking at a luncheon in connection with the inauguration said he hoped the Mersey plant, as a result of the benefits of the extension, would be able to pay more for their pulpwood in the new mill. Premier Macdonald, who also gave an address, said his government would do anything in reason to assist the paper industry in the province. No plans have yet been announced for additional facilities in the Mersey plant itself, though for some time there has been talk of the installation of another paper-making machine. The mill has had a record of capacity production for years.

Paper Concerns Seek Tax Reductions

[FROM OUR REGULAR CORRESPONDENT]

COHOES, N. Y., October 31, 1938.—Several paper mills of this city are among the concerns which have started certiorari proceedings in order to secure a review of the 1939 assessments on their properties which they claim are excessive. Reductions amounting to over $275,000 are sought by the various concerns. The W. W. Snyder Paper Company is seeking a reduction from $35,000 to $15,000 on its property on Delaware Avenue. James C. Gledhill Sons, ask for a reduction from $80,000 to $50,000 on their property on Saratoga street, claiming the assessment is unjust. Reductions on three parcels of property owned by the Cohoes Envelope Company are also sought. The company seeks a reduction from $13,500 to $6,000 on its property on Newcomb street; on property in Jackson avenue, from $26,000 to $18,000 and on its mill on Olmstead street from $55,000 to $30,000.

Sutherland Paper Makes Good Report

The Sutherland Paper Company reports as follows for the nine months to September 30: Net profit, $506,491, equal to $1.76 each on 287,000 shares of $10-par capital stock, compared with revised net of $710,597, or $2.47 a share, last year. Twelve months to September 30: Net profit, $590,825, equal to $2.06 a share, against $844,902, or $2.94 a share, for the twelve months to September 30, 1937.

Fraser Reports Loss

Fraser Companies, Ltd., and subsidiaries for nine months to Sept. 30, report loss before Dominion, Provincial and United States income taxes, amounted to $73,962. It compared with a profit of $720,461 reported for the first nine months of 1937.

Ruberoid Makes Good Report

The Ruberoid Company and wholly owned subsidiaries report as follows for the September quarter: Net profit, $345,773, equal to 87 cents a share, against $331,042, or 83 cents a share, in the same quarter a year ago. Profit for the 1938 period includes $158,091, representing the excess of a liquidating dividend received from Ruberoid Purchasing Corporation, which was dissolved on September 23, 1938, over the cost to the Ruberoid Company of its investment in that company. Earnings of $11,937 of the Ruberoid Purchase Corporation for the third quarter of 1937 are not included in the profits for that period. Nine months to September 30: Profits including liquidating dividend of $158,091 from Ruberoid Purchase Corporation, amounted to $351,052, equal to 88 cents a share, compared with $805,470 or $2.02 a share for the corresponding period of 1937 which do not reflect earnings of $68,829 of the Ruberoid Purchase Corporation for that period.

Abitibi May Sell Power Co.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., October 31, 1938.—Purchase of the distribution system of the Kaministiquia Power Company, Limited, as forecast by Dr. T. H. Hogg, chairman, might provide the Abitibi Power & Paper Company, Limited, with new money as the Abitibi Company owns all the outstanding bonds and capital stock of Kaministiquia Power. The power development in excess of that required for the operation of the Fort William newsprint mill owned by the Abitibi Company, is supplied to about forty industrial customers in Fort William.

Gair Net Loss $37,946

Rober Gair Company, Inc., and subsidiaries for September quarter report a net loss after preferred dividends of subsidiary and provision for interest on income notes, $37,946, compared with $49,733 loss in preceding quarters and net profit of $179,525, equal after dividend requirements on $3 preferred stock, to 7 cents a share on 574,613 common shares in third quarter of 1937. Nine months to Sept. 30; Net loss $73,635, contrasted with net profit last year of $851,455, or 75 cents a common share.

RFC Loan for Rogers Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 2, 1938—The Reconstruction Finance Corporation has announced that during the month of September it made a loan of $115,000 to the Rogers Paper Manufacturing Company, Manchester, Conn. Up to the end of September, none of the actual cash had been paid on this loan.

Soundview Reports Net of $66,379

The Soundview Pulp Company and subsidiaries report as follows for the September quarter: Net income, $66,379, against $110,764 income in June quarter and $788,854 earned in September quarter of last year. Nine months to Sept. 30: Net income, $374,351, compared with net of $1,459,833 last year.

Gair Old Timers Association Holds Sixth Annual Dinner Meeting

The Sixth Annual Banquet of the Gair Old Timers Association was held on October 22, 1938, in the Grand Ball Room of the Hotel New Yorker, New York city. This association, founded in 1933, in memory of Robert Gair, by those who had worked for Mr. Gair or his company, has continued with undiminished interest, as indicated by the fact that over 100, who had been at one time or another associated with Robert Gair Company for a period of ten years, attended this dinner. Every year since the association was founded, over 100 have sat down together at the annual dinner.

Officers for 1938

The officers for 1938 were: Honorary chairman, George W. Gair, chairman of the board, Robert Gair Company, Inc.; honorary president, William Worrell, retired, who started his employment in 1882; president Wilbur F. Howell, secretary, Robert Gair Company, Inc.; vice-president, Joseph T. Mertz, of National Biscuit Company, Beacon, N. Y.; and secretary-treasurer, H. B. Van Antwerp, of Sinclair & Valentine Company, New York.

Officers for 1939

The officers for 1939 were elected at the dinner, as follows: Honorary chairman, George W. Gair, chairman of the board, Robert Gair Company, Inc., honorary president, William Brennan, retired, whose employment began in 1883 and continued throughout his business career; president, George W. Shannon, Robert Gair Company, Inc.; vice-president, Felix F. Doll, William W. Fitzhugh, Inc.; and H. B. Van Antwerp, of Sinclair & Valentine Company, New York City, was re-elected secretary-treasurer.

Interesting decorations of the banquet room were photo murals of groups of employees of 1887 and 1922 and of the bronze memorial tablet erected by the association in 1937 to the memory of Robert Gair.

Mr. Howell Speaks

In his address, the retiring president, Mr. Howell, said: "Our association is unique in that it is founded for the purpose of perpetuating a spirit and ideal which it inherited and which it proposes to safeguard and pass on. Can't we, with credit to ourselves, individually take on the responsibility in these complex days of carrying on, each in our own way, the tradition of the solid, substantial, businesslike Americanism as exemplified by Mr. Gair? We do not think of him as a foreigner, an emigrant or as a man born in another country in a foreign environment, because of the splendid example of real practical Americanism which he practiced throughout his life. Today it is obvious there are too many isms subversive to progress and to democracy. They use the privilege of free speech for criticism of our government and advocate types of governments whose first move is always to curb a free press and free speech. Robert Gair was a doer—not a talker. What better tribute could we pay Robert Gair than for each of us to review his example and in our own business and social circles spread the practical and courageous Americanism of which he was so fine an example."

Mr. Shannon Responds

Mr. Shannon responded to his election with a talk on Robert Gair and the insipiration and example he imparted to all those who were associated with him.

The association, which last year erected a bronze memorial tablet to Mr. Gair at Washington and York Streets, Brooklyn, is planning to suitably commemorate next year the Centenary of Robert Gair, who was born July 31, 1839, and whose company was started seventy-five years ago on July 7, 1939.

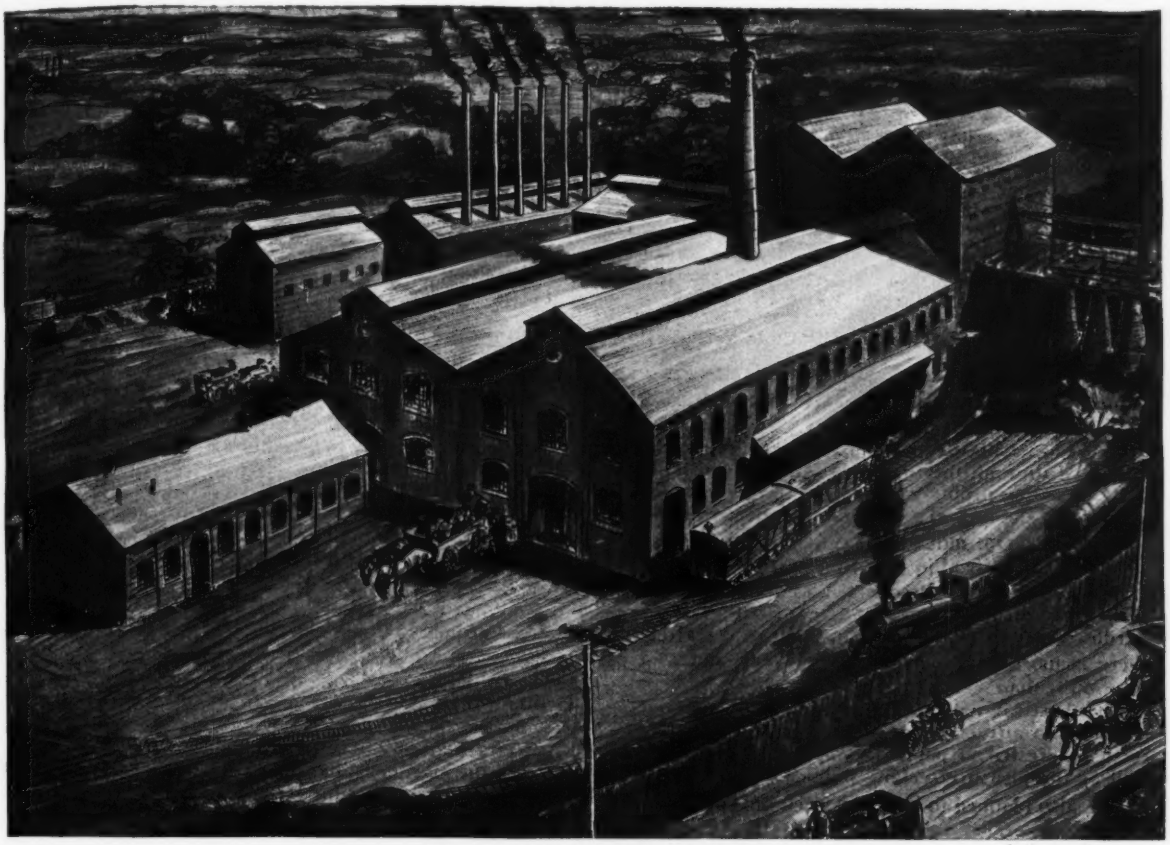
Those in Attendance

Among those present at the Banquet were: Harry D. Adriance, P. L. Andrews, Hugh E. Axmacher, L. D. Barbieri, Clarence S. Barnes, Sidney J. Bender, Gus Benson, Chas. G. Bevis, Frank Blocker, William Brennan, Charles Burke, Peter Burke, Albert W. Campbell, William F. Cavanagh, John A. Coakley, F. Collins, F. C. Cotello, H. V. Costigan, Fred Coursen, Thomas Dalton, John Delaney, William S. Delp, Michael De Nigris, Bruce R. Devon, A. Doll, F. F. Doll, Geo. H. Drake, J. W. Duerr, Ed. Dumas, Carl Edickson, Chris Euble, Samuel Evans, Jr., John Flynn, F. Gaus, William Glennon, Julius Goetz, John J. Gormley, C. T. Gritman, Henry Hagedorn, James Hall, William Hegermiller, Oscar Hendrickson, Camille Heyman, Gene Hogan, George Horneker, Carl B. Holm, W. F. Howell, August Huether, Earle D. Hull, Andy Kaff, Edwin Kain, Joseph Keating, Edward Kelly, Michael Keinzle, Paul Lang, Ivor Larsen, Geo. R. Logan, Milton G. Love, Henry Luz, J. H. MacIninch, Otto Mann, A. R. Martin, John Martin, Frank J. Meyer, William Meyer, Charles Mills, C. W. Morrison, Geo. W. Murray, John McCole, Patrick McCormick, John F. McKenney, E. McKinnon, Edward F. McMahon, H. J. McPhilliamy, Henry Obenauer, Dennis O'Connor, Ed. Pabst, John Pabst, W. H. Patterson, John Paxson, Charles Phoebus, Henry W. Pupke, W. E. Ringle, Henry Rust, Frank Schmidt, E. Schroeder, Joseph Schultz, E. E. Seaver, G. W. Shannon, Leroy G. Shepard, Alfred Smith, Francis Smith, Stanley Smith, C. F. Stocker, Fred Stocker, H. B. Van Antwerp, H. B. VerEecke, Fred Vetter, John Vogel, George Wahlig, F. G. Wasgatt, Alfred Weigand, R. T. Williams, William Worrell.

Quality Control at Production Conference November 9 and 10

The Industrial Engineering Committee of TAPPI calls attention to the meetings on Quality Control to be held at the Hotel Pennsylvania, New York, November 9 and 10.

Quality Control is a very live subject in the paper industry and the TAPPI committee has been studying this subject actively. It is believed that much of interest to papermakers may be developed at the above conference which is to be held by the American Management Association.



VIEW OF ORIGINAL PLANT IN 1900

Through The Centuries With Alkalies

HERE in 1900 began production of COLUMBIA Soda Ash. Quickly the plant grew. In 1901 COLUMBIA Caustic Soda was first produced. Important by-products further contributed to rapid growth. In 1936 came the first production of COLUMBIA Liquid Chlorine. The same year saw the development of COLUMBIA Sodium Bicarbonate. Other Alkali and Chemical Products are supplementing this line as fast as man's inventive genius discovers better ways to fill man's ever-increasing needs.

OUR PART is humble; our products unromantic. But in the making and processing of many of the oldest, most useful, most necessary commodities on earth they play a vital part. Upon the quality of our output depends the quality of innumerable productions. Glass is clearer; paper is whiter; textile fibres are finer; even the bread we eat and the water we drink are purer, because of the way we do our part. So, accepting this responsibility, we serve the needs of industry with faithfulness and zeal, vigilantly maintaining exacting standards which permit no compromise with quality—and never will.

COLUMBIA

SODA ASH
CAUSTIC SODA
SODIUM BICARBONATE
MODIFIED SODAS
LIQUID CHLORINE
CALCIUM CHLORIDE

THE COLUMBIA ALKALI CORPORATION
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NEW YORK · ST. LOUIS · CLEVELAND · CHICAGO · PITTSBURGH · MINNEAPOLIS · BOSTON · CINCINNATI · PHILADELPHIA

Plans for Paper Festival at Savannah

An annual paper festival will be held at Savannah, Georgia, the first to be on April 17-18-19, 1939. This festival is to commemorate paper in the same way that other Southern cities foster cotton, tobacco, textiles and other products. Aside from the entertainment features which will be lavish and attractive to the general public, it will have an intense industrial motive towards Advancing the Use of Paper Products which will be of value to the industry and its public relationship.

Festival is Generously Endorsed

The motive of the festival has been generously accepted by the principal manufacturers and the state executives of the Southern states as worthy of their sponsorship and the preliminary financing is being arranged through the Southern Paper Festival Association, a non-profit organization of public spirited citizens of the city of Savannah. Provision is being made for several industrial exhibitions, the main one of which will be held in the Municipal Auditorium for Paper and Fibrous Products, and it is intended to make this display representative of all grades, regardless of the point of manufacture as after all there is more paper made in the North and sold in the South than vice versa.

The Festival will be given wide publicity and is expected to attract many of those directly and indirectly interested in paper products, forestry, etc., as well as the pleasure seeking public.

It is also planned to have the week of April 17 proclaimed generally as Paper Week throughout the states and their cities with special window displays of these products.

Facilities will also be made available by the festival committee for trade group meetings that those in the industry may desire to hold there at that time and special banquets will be arranged for visiting Industrialists.

Exhibition of Industrial Equipment

An exhibition of industrial equipment will also be held at the Hotel De Soto and another exhibition of forestry conservation will be displayed at the Savannah Hotel during the festival.

The festival will be held at the time of year when Savannah will be at its best with azaleas and other blossoms still in bloom. Its proximity to the ocean and its inland waterways together with its several golf courses will offer every opportunity for interesting sports events and special golf, skeet, pistol and tennis matches will be arranged.

The festival will be formally started by the Mayor on Monday, April 17 with the opening of the various exhibitions and the window display contest of paper products by the merchants. At noon a welcome luncheon for distinguished guests will be held at the De-Soto Hotel and there will be various features of entertainment such as motor boat races, lectures and group meetings for the afternoon. In the evening a grand historical pageant and spectacle will be presented featuring the history of paper from the days of papyrus to its first inception in China and thence through the ages to the Rittenhouse mill, the first to be built in the United States and with other historical events pertinent to the industry, will lead up to a grand finale illustrating every possible use of fibrous products through a paper ballet. Also among these scenes will be the representation of a forest fire and its suppression by the CCC.

King and Queen to be Selected

A king and queen will be selected by a secret festival society that will be named papyrus, and with a court of princesses from each state a corporation ceremony and ball will be held after the pageant.

On Tuesday, April 18 the featured events will consist of grand coronation parade of decorated floats representing the states, the industry, as well as the ceremonial conveyances of the king and queen and princesses. There will be special luncheons for industrial groups and fashion show for the ladies. In the afternoon facilities will be available for visits to the industries and there will also be an aviation show. In the evening there will be a governor's banquet and formal ball for invited guests and the historical pageant will again be presented.

On Wednesday, April 19, the carnival spirit will prevail starting with another mammoth industrial and civic parade including the decorated floats, band competition, military and naval reviews. In the afternoon besides the sports events there will be special features such as a colored costume baby parade, water sports, etc. In the evening a masque paper ball will be given by the papyrus club with street dancing, parade and general holiday spirit bringing the festival to a close.

To Issue Souvenir Program

An attractive souvenir program will be distributed during the festival and additional copies will be sent to the various representatives of the Industry and others interested throughout the nation. Besides the program of events, this program will carry many interesting articles on the history of paper, the manufacture of paper, the use of paper, as well as forest conservation and similar subjects. The balance of the program will be devoted to industrial advertising.

Information regarding reservations for the paper products exhibition space, equipment exhibition space, and for advertising in the souvenir program may be obtained by writing the Southern Paper Festival Association, D. G. Moon, managing director.

In general it is believed that the program, which is both entertaining and educational, with its industrial theme will be of considerable interest to the Industry as the general motive is to stimulate and advance the use of paper products as well as educate the public in their importance, will preclude any sectional promotional propaganda that might be detrimental to the industry and its problems as a whole.

United Paperboard Report Profit

United Paperboard Company, Inc., and Subsidiaries report as follows for the quarter to August 27: Net profit, $13,501, equal to $1.04 each on 12,920 shares of non-cumulative 6 per cent preferred stock, against $41,734, or 9 cents each on 240,000 common shares, for the quarter ended August 28, 1937.

"Know Your Papers" Contest

The unique "Know Your Papers" contest featured by the Crossett Paper Mills at their exhibit during the recent N. P. T. A. convention at the Stevens Hotel in Chicago, created a lot of interest during the convention and should create some thinking on the part of merchants interested in the profitable distribution of Kraft paper when they get back home.

This contest was really an examination to determine how well merchants know grades, character, and weights of wrapping paper. An envelope containing fifteen samples of various weights, colors, and types of wrapping paper together with an examination blank on which merchants were asked to identify the manufacturing source, the trade name (if any), the basis weight, and the purpose (that is, bag paper, butchers' paper, general wrapping paper, and so forth), was provided for every merchant who cared to take the examination.

At six o'clock each day the examination blanks which had been deposited in a large Kraft cylinder, made to represent a roll of wrapping paper, were collected and graded. The scores of the individual merchants were not published, but the contest nevertheless created a lot of interest, especially since each day the individual scoring the highest grade was awarded his choice of either $50.00 in cash or a ton of Crossett Kraft free.

The winner on Monday was jovial Jack Wittrock, president of the Paragon Paper Company of Cincinnati and ex-president of the Paper and Twine Club. On Tuesday the winner was another Cincinnati merchant, namely Bob Seybold of the Seybold Paper Company. On Wednesday Al Gall of the Central Ohio Paper Company at Toledo topped the list.

From the conversation heard in the Crossett exhibit room and around the hall-ways on the 5th and 6th floor at the Stevens, it was evident that while many merchants may be familiar with the sheets which they themselves carry, they are not as fully acquainted with competitive lines as they should be.

Magnus Vapor Cleaner

Magnus Chemical Company, Inc., has just issued a new descriptive folder on its new product, Magnus Vapor Cleaner.

Magnus Vapor Cleaner is made to give the greatest effectiveness and speed to steam or vapor cleaning, combining the principles of soap washing with solvent cleaning. The combination of the two results in faster and more thorough "cutting" action than is found when either is used alone.

This new product is offered in two grades—Magnus 92-E for light duty cleaning; Magnus 94-E for heavy duty cleaning. Both are light brown pastes, quickly and readily soluble in water. They impart to the water it is said a wetting, penetrative and solvent effect beyond that of any soap or alkali.

Magnus Vapor Cleaner is guaranteed to function satisfactorily in any make of steam or vapor cleaning machine, such as the Hy-Pressure Jenny, the Kerrick Kleaner, the Circo Cyclone Cleaner, the Ofelt, the Eclipse and the Star.

A copy of this new folder may be had by writing to the Magnus Chemical Company, Inc., Garwood, N. J.

FINLAND SUOMI

REPRESENTATIVES IN U. S. A. AND MEXICO

OF THE

FINNISH CELLULOSE ASSOCIATION

HELSINGFORS, FINLAND

FINNISH WOOD PULP UNION

HELSINGFORS, FINLAND

PULP SALES CORPORATION

230 PARK AVENUE

NEW YORK, N. Y.

Obituary

William J. Finlay

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 1, 1938—The death has occurred here of William James Finlay, president of the Strathcona Paper Company, in his 79th year.

Mr. Finlay was the dean of Canadian paper makers. Born in Wissahickon, Pa., he started to work in a paper mill at the age of 12 as a cutter boy. His father, who served his apprenticeship in the papermaking industry in Scotland, was his superior.

In 1876 the family moved to Canada and settled in Windsor Mills, Que., where the father became superintendent of the Canada Paper Company mill. At the time there were only six paper mills in Canada.

At the age of 21, William J. Finlay was appointed assistant superintendent of the Canada Paper Company. He served with various other companies, including the Dominion Paper Company at Montreal, till 1901 when he became affiliated with the Strathcona concern.

Surviving are his two sons, George, secretary-treasurer and western sales manager of the company, and Bruce, vice-president and superintendent; two daughters, Mrs. Mabel Johnson, of Toronto, and Mrs. Best, of Strathcona; and two sisters, Mrs. Alfred Witty, of Windsor Mills, Que., and Mrs. George Ellis, of West Newton, Mass.

Leslie M. Appleford

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., October 31, 1938 — Leslie M. Appleford, president and general manager of Consolidated Sales Book & Wax Paper Company, Limited, Hamilton, Ont., died recently at his home in Port Nedson, after a long illness, aged sixty-five years. As a young man he became interested in newspaper work and learned the printing trade. Along with his brother, the late Alfred A. Appleford, he operated several country newspapers. It was at Seaforth that he developed the first counter sales book bookkeeping system which prompted him to give up newspaper work and move to Hamilton where he specialized in counter sales books. Some years after the company branched in the wax paper line. Mr. Appleford founded the original business some thirty-two years ago as the Imperial Printing Company, later changing the name to the Appleford Counter Check Book Co. Several years later he left this company and organized the consolidated Sales Book & Wax Paper Co. He was prominent in industrial and community welfare work and is survived by his wife, four daughters and one son, Dr. Robert D. Appleford, of Hamilton. He was a leading member of the Rotary club and the Masonic craft.

John P. Durkin

John P. Durkin, 59, president of the Wilson Wire Works, Inc., Kearny, N. J., manufacturers of wire and Fourdrinier cloth, died October 28 at his home in Arlington after an illness of more than a year.

Mr. Durkin was born in New York and in his youth was employed in foundry work. In 1908 he was appointed Street Commissioner of Newark, N. J. by former Mayor Louis M. Brock, serving during the Mayor's three terms of office.

About twenty years ago Mr. Durkin acquired an interest in the Wilson Wire Works and had been president of the company for the past ten years. He was a member of Kearny Lodge of Elks, the Holy Name Society of St. Stephen's Church, Kearny Council K. of C., and Kearny Exempt Firemen.

Surviving are his widow, a daughter, a brother and two sisters.

Michael Slotnick

Michael N. Slotnick, 49, former general counsel for the American Writing Paper Company, former member of the Holyoke, Mass., board of aldermen and state representative from the old 11th Hampden district, died suddenly at his home, 10 West 86th street, New York City, October 27.

Born in Russia, he came to this country with his parents when a year old. He was graduated from the Holyoke High School, from Yale University in 1910, and from Yale Law School in 1912. He practiced law here until 1920, when he went to New York, where he became a member of the law firm of Kugel and Telsey, later withdrawing to establish his own offices.

He was elected state representative in 1918 on the Republican ticket by a margin of 36 votes.

He leaves his widow, a son, a brother, and two sisters.

Raymond C. Cooper

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., October 31, 1938.—Raymond C. Cooper, beater room superintendent at the Marathon Paper Mills Company, Rothschild, Wis., dropped dead while at work at the mill the morning of October 27. Heart disease was attributed as the cause. Mr. Cooper had been an employee of the mill for more than 20 years.

Wilhelm Kolletschke

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., October 31, 1938.—Wilhelm Kolletschke, aged 77 years, died October 25 at Theda Clark hospital, Neenah, Wis., following a long illness. He had been employed for more than fifty years as a millwright for the Fox River Paper Company, Appleton, Wis., and since retirement had resided with his son at Neenah.

New England Paper Merchant

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 31, 1938.—A meeting of the New England Paper Merchants Association was held recently at the Parker House with 35 present and President John R. Halkyard in the chair.

John D. Zink, executive vice-president of the Strathmore Paper Company, the speaker of the evening, introduced by Vice-President John Brewer, gave a highly illuminating talk on the volume of paper manufactured and sold over the last ten years.

Before the dinner, brief business sessions were held by the Fine Paper Division, with Vice-President Brewer presiding, and by the Wrapping Paper Division, with Vice-President John F. Blackman in the chair.

New TAPPI Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Tore P. Ahlen, engineer, Svenska Flaktfabriken A/B., Stockholm, Sweden, was a 1929 graduate mechanical engineer of Orebro.

Norman Alper, Vice President, M. S. Alper & Son Inc., Providence, R. I., a 1934 graduate of Lehigh and was formerly with the Equitable Bag Company, Brooklyn, N. Y.

Donald H. Baker, chemist, British Columbia Pulp and Paper Company, Port Alice, B. C., was a 1935 graduate chemical engineer of British Columbia University.

Pierre F. Beaudry, Chief Engineer, Rolland Paper Company Ltd., St. Jerome, Que., was a graduate Civil Engineer of Montreal University and Massachusetts Institute of Technology.

John L. Ritter, chemical engineer, North American Rayon Corporation, Elizabethton, Tenn., received his Ph. D. from University of Darmstadt, Germany.

Benjamin Blocker, chemist, Rust Craft Publishers, Inc., Boston, Mass., was a 1935 graduate of Massachusetts Institute of Technology.

H. R. Braak, chief chemist and senior officer to N.E.I. Government, Netherland East Indies Government Plantations, Koningsplein, Batavia, Java, N.E.I., graduated from University of Groninger, Holland in 1927 with Doctor in Chemistry degree.

Ferri Casciani, Research Chemist, Electro Bleaching Gas Company, Niagara Falls, N. Y., was a 1931 graduate of Syracuse University. He has worked at Tonawanda Paper Co., Kimberly-Clark Corp. and was laboratory assistant at N. Y. State College of Forestry.

Hsi Chieh Cheng, graduate assistant in chemical engineering, Ohio State University, Columbus, Ohio, a 1937 graduate from Ohio State with M. S. degree.

Clarence T. Clark, Division Chemist, Restigouche Co. Ltd., Campbellton, N. B., was formerly with N. B. International Paper Company and attended Mount Allison University.

Theodore K. Cleveland, Chief Chemist, Phila. Quartz Company of California Ltd., Berkeley, Cal., received his Ph. D. in 1925 from Yale.

Helmuth Colombo, assistant director, Rigas Papirfabriku A/S, Ligatne, Latvia, attended Vienna U. and received the Doctor of Engineering degree in 1933 from Dresden. He was formerly with Komag Paper Company and Fullenerwerk Paper Co., both in Germany.

Edwin H. Coon, senior, New York State College of Forestry, Syracuse, N. Y.

Jacob Dahl, cellulose-chemist in charge, Norsk Hydro Elektrisk Kvalstofaktreselskab, Norway, received Dipl. Ing. Chem. 1923, Dr. Techn. Wissenschaften 1935, Zürich. He was formerly with Hamang Papierfabrik, Canadian International Paper Company and Kellner Partington P. & P., Co., Austria.

William C. Dodge, technical director, News Syndicate Company, Inc., New York City, received his M. S. degree in 1931 from Massachusetts Institute of Technology.

George S. Douglas, engineer, Mead Corporation, Chillicothe, Ohio, is a 1930 graduate of University of Washington. He was formerly with the Washington Pulp and Paper Company.

Sydney K. Dowst, paper chemist, R. T. Vanderbilt Company Inc., New York City, is a 1938 graduate of N. Y. State College of Forestry.

Carl Fromm, mechanical engineer, Worthington Pump and Machinery Corporation, Harrison, N. J., attended the Institute of Techn. Aachen, receiving the degree of Dr. of Engineering in 1921. He was formerly with Eldrich Pump Company, Earle Gear and Machine Company and Lecourtnay Company.

John D. Gaffney, Chemist, Arden-Rayshine, Inc., Watertown, Mass., is a 1936 graduate of Northeastern, and comes from Sheffield, England. He was formerly with Angier & Earle, Ind. and Solvay Process Company.

William S. Grimes, Chemical Engineer, Menasha Products Co., Menasha, Wis., received his M. S. degree from the Institute of Paper Chemistry.

Erik Karl M. Hagglund, Professor, Royal Technical University, Kungliga Tekniska Hogskolan, Stockholm, Sweden, received his Ph. D. in 1914 from the University of Stockholm. He was formerly with Bergvik Sulphite Pulp Mill, Th. Goldschmidt in Germany and Academy of Abo, Finland.

Francis R. Hamilton, research engineer, Allied Paper Mills, Kalamazoo, Mich., received his M. S. in 1938 from the University of Michigan.

C. E. Hartford, chief chemist, Southern Kraft Corp., Panama City, Fla., received his Ph. D. in chemical engineering from Iowa State and was formerly with U. S. Bureau of Standards, Maizewood Products Corp., and Tenn. Valley Authority.

Cyrus H. Heigl, graduate fellow in pulp and paper, N. Y. State College of Forestry, is a 1932 graduate of the Univ. of Wisconsin and was formerly with Northern Paper Company and Beloit Iron Works.

A. S. Hocker, assistant superintendent, S. D. Warren Company, Cumberland Mills, Me., is a 1917 graduate of Indiana University and has been with his present company over 15 years.

Clayton M. Holt, Salesman, Diamond Alkali Company, Pittsburgh, Pa., attended the Univ. of Wisconsin and was formerly with Kimberly-Clark Corp., Peshtigo Paper Company and Penn. Salt Manufacturing Company.

Canadian Prospects Brighter

MONTREAL, Que., November 1, 1938.—Following the passing of the crisis in Europe, Harold Crabtree, president of Howard Smith Paper Mills, Ltd., has expressed the view that prospects are much brighter for the pulp and paper industry. Writing on the subject he says:

"One of the chief factors contributing to any improvement in business is the restoration of confidence. The removal of the danger of World War, at least for some time, has done, perhaps, more to restore this feeling of confidence in the future than any other agency.

"Having this as a background, and with the generally improved outlook in Western Canada, consumer demand is almost sure to be upward over the next six months or more. Impetus to this movement will be given by the betterment which appears to have made a real beginning in the United States and I feel hopeful that the demand for pulp and paper will follow the general trend, bringing about a much-to-be-desired improvement for the industry."

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Dresden, Ohio—The Dresden Paper Mills Company, manufacturer of straw board and kindred specialties, has plans maturing for new one-story addition, about 40 x 90 feet, to be used primarily for storage and distribution. Cost estimated over $35,000, with equipment. Bids will be asked soon on general erection contract.

Albany, N. Y.—The A.P.W. Paper Company, Albany, manufacturer of tissue stocks, is reported planning construction of a new mill in the South, where several sites are being investigated, including the Gulf Coast area and in vicinity of Savannah, Ga. Proposed mill will comprise several units and will be designed to develop large capacity. No estimate of cost has been announced. Selection of suitable site is under the direction of Dwight G. W. Hollister, executive vice-president.

Holyoke, Mass.—The American Writing Paper Corporation, 9 Main street, has awarded general contract to D. O'Connell & Sons, 480 Hampden street, Holyoke, for improvements and repairs in mill used for its Linden Division on Jackson street. No estimate of cost announced. Work will be placed under way at once.

Canajoharie, N. Y.—Arkell & Smiths, manufacturer of paper sacks, etc., have begun work on new addition to mill, recently referred to in these columns and will push to early completion. It will be one-story, 100 x 180 feet, reported to cost in excess of $80,000, including equipment. G. W. Randall, 18 South Market street, Johnstown, N. Y., is general contractor for erection. Magill & Smith, 232 Madison avenue, New York, N. Y., are architects.

Toledo, Ohio—The Toledo Paper Box Company, 1116-24 True street, manufacturer of folding paper boxes and containers, has filed plans for one-story addition to be used for distributing service. General contract for erection has been let to A. Bentley & Sons Company, 201 Belmont street, Toledo, and work will be placed under way at once. No estimate of cost has been announced.

Brooklyn, N. Y.—The New Deal Paper Box Corporation, recently organized with capital of 200 shares of stock, no par value, plans operation of local plant for manufacture of a line of paper boxes and containers. New company is represented by Frederick A. Wiehl, 5514 Myrtle avenue, Ridgewood, Brooklyn.

Rochester, N. Y.—The Rochester Envelope Company, 72 Clarissa street, manufacturer of commercial envelopes, has plans for new two-story addition to paper-converting plant, and will proceed with erection at early date. Work will be carried out by day labor under separate contracts. Cost estimated close to $45,000, with equipment. C. R. Traver is company engineer and will supervise construction.

Cincinnati, Ohio—Fire recently damaged a portion of plant of the Chatfield Paper Corporation, Third and Plum streets, manufacturer of paper specialties, comprising the building housing the varnishing and finishing division. An official estimate of loss has not been announced. It is proposed to rebuild at early date.

Philadelphia, Pa—The Sabin-Robbins Paper Company, Fifteenth and Chestnut streets, Philadelphia, manufacturer of paper products, with headquarters at 3800 Ludlow avenue, Cincinnati, Ohio, has leased space in the building at Twenty-sixth and Reed streets, Philadelphia, totaling about 7500 square feet of floor space, and will occupy for local branch, including storage and distributing service.

Neenah, Wis.—The Kimberly-Clark Corporation, has superstructure in progress for new addition to mill, previously referred to in these columns, to be one-story, 70 x 160 feet, and will have the structure ready for occupancy in near future. It will be used primarily for storage and distributing service, and is reported to cost approximately $35,000, with equipment. Erection is being carried out by C. R. Meyers & Sons Company, 50 State street, Oshkosh, Wis., general contractor.

Providence, R. I.—The California Artificial Flower Company, 14 Blount street, manufacturer of paper flowers, has plans maturing for new paper-converting plant on local site on Reservoir avenue, to be two-story and basement, 75 x 100 feet, estimated to cost close to $75,000, with equipment. Bids on general erection contract are now being considered and work is scheduled to be placed under way at early date. A. Harkness, Industrial Trust Building, Providence, is architect.

Buffalo, N. Y.—The Thayer Envelope Company, Inc., recently organized with capital of $25,000, plans operation of a local paper-converting plant for the manufacture of commercial envelopes and kindred paper specialties. New company is represented by Smith & Kendall, Genesee Building, Buffalo, attorneys.

Hawkesbury, Ont.—J. A. Jacobs, 2226 Dorchester street West, Montreal, Que., is at head of a project to construct and operate a wood pulp mill in

vicinity of Hawkesbury, Ont., to utilize a quantity of waste wood pulp material now available in the Snye Channel of the Ottawa River in that district. Proposed mill will be one-story, with several auxiliary storage and distributing buildings, and is reported to cost close to $75,000, with equipment.

Melbourne, Australia—The Australian Paper Manufacturers, Ltd., Melbourne, Victoria, has completed buildings for its pulp mill in the vicinity of Gippsland, near Melbourne, and will proceed with installation of machinery and equipment at once. Plant will comprise several units and will represent an investment in excess of $750,000, including equipment. It is proposed to have the mill ready for production early in 1939. Supplies of raw material are now being stocked, to provide continuous service at the plant when operations are started.

Indianapolis Trade Optimistic

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., October 29, 1938—While the volume of business does not seem to expand as it should in the paper trades here, there is a certain foundation of optimism among the leaders of the trade that augurs well for late fall business. Insofar as the local jobbing trade is concerned, the hurricane in New England will not have a very serious effect since orders were relatively light and plant damage and railroad tie-ups likely will cause no bad delays. The trend in Europe toward peace seemed also to instil a little confidence in local trade and also among the consumers of paper and paper products. It is confidently believed now that war is averted at least for some time, business will recover to a considerable extent.

Demand for covers, ledgers and book papers continues to fluctuate from week to week but the trend definitely is toward expansion. Prices are being held firmly and there is no present trend toward higher levels. Buying is on a hand to mouth basis and likely will continue so until something more certain is to be seen in general conditions. There will be a fair volume of direct by mail advertising this fall judging from the number of inquiries being received from printers who specialize in this type of work.

Container demand is steady and is expanding slowly. A fair demand now is seen for special containers and boxes for the hardware, textile and automotive equipment trade. Inquiries are arriving for containers for the confectionery trade and this business should pick up rapidly with the coming of cooler weather.

Paper stock executives here report a light demand for rags during the last week. Prices continue to hold firm. The waste paper market also is somewhat stagnant with prices uncertain and below the level the local dealers believe they should be.

Burstein Erects New Warehouse

NEENAH, Wis., October 31, 1938—Meyer Burstein Company has started construction of a warehouse on Tyler Street. It will be of brick and concrete, 125 by 50 feet in size, and the approximate cost is $8,500. The company deals in paper and rag stocks, and had its warehouse destroyed by fire recently.

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 2, 1938 — The Government Printing Office has received the following bids for 159,000 pounds (1,000,000 sheets) of 31½ x 48 M. F. book paper: Enterprise Paper Company, 5.03 cents; Cauthorne Paper Company, 5.14 cents; Paper Corp. of U. S., 5.13 cents; Marquette Paper Company, 5.06 cents; R. P. Andrews Paper Company, 5.14 cents; Barton, Duer & Koch Paper Company, 5.14 cents; Mudge Paper Company, 5.03 cents; Stanford Paper Company, 5.12 cents; Old Dominion Paper Company, 5.14 cents; Walker, Goulard Plehn Company, 5 cents; Perkins-Goodwin Company, 5.14 cents; Whitaker Paper Company, 5.14 cents; John F. Post, Inc., 5.14 cents; and Butler Company, 5.14 cents.

For 14,300 sheets of 25 x 31, 4 ply white cardboard: Barton, Duer & Koch Paper Company, $27.68 per M sheets; Stanford Paper Company, $27.75; Whitaker Paper Company, $29.66; Paper Corporation of U. S., $31.00; and Mudge Paper Company, $28.70.

For 18,500 sheets of 29 x 37, 4 ply white cardboard: Barton, Duer & Koch Paper Company, $38.13 per M sheets; Stanford Paper Company, $38.40; R. P. Andrews Paper Company, $38.79; Whitaker Paper Company, $41.07; Paper Corporation of U. S. $32.30; and Mudge Paper Company, $39.75.

For 46,750 pounds (500,000 sheets) of 32 x 42 white sulphite writing paper: Whitaker Paper Company, 5.72 cents; R. P. Andrews Paper Company, 6.23 cents; Barton, Duer & Koch Paper Company, 5.68 cents; Stanford Paper Company, 5.74 cents; Mathers-Lamm Paper Company, 6.37 cents; Marquette Paper Company, 5.69 cents; Aetna Paper Company, 5.57 cents; Paper Corporation of U. S., 6.648 cents; Cauthorne Paper Company, 6.2 cents; and Graham Paper Company, 6.25 cents.

For 10,500 sheets, 22 x 28, 12 ply orange cardboard: Mudge Paper Company, $47.08 per M sheets; Old Dominion Paper Company, $54.99; Graham Paper Company, $79.50; Barton, Duer & Koch Paper Company, $51.31; Walker, Goulard Plehn Company, $54.45; Stanford Paper Company, $58.00; Enterprise Paper Company, $56.559; and Paper Corporation of U. S., $51.90.

For 40,000 pounds of M. F. book paper: Walker Goulard Plehn Company, 5.28 cents; Cauthorne Paper Company, Inc., 5.03 cents; Paper Corporation of U. S., 5.29 cents; R. P. Andrews Paper Company, 5.29 cents; Marquette Paper Company, 5.51 cents; Barton, Duer & Koch Paper Company, 5.29 cents; Stanford Paper Company, 5.29 cents; Old Dominion Paper Company, 5.22 cents; Perkins-Goodwin Company, 5.29 cents; Whitaker Paper Company, 5.29 cents; John F. Post, Inc., 5.46 cents; and Graham Paper Company, 5.29 cents.

J. Walter Juckett Speaks on Papermaking

GLENS FALLS, N. Y., October 31, 1938.—J. Walter Juckett, of the Sandy Hill Iron and Brass Works, delivered an address this week at a gathering at the local Y.M.C.A. in which he told of the various processes used for the manufacture of pulp and paper machinery. He illustrated his talk with moving pictures and slides and also gave a brief history of papermaking.

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COMING EVENTS IN THE PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

ECONOMIC PROGRESS

As industrial and trade activity slowly improves and the Government is attempting to blaze the road to prosperity by increased spending, the vital part which private industry plays in the economic welfare of the country, and upon which Government is entirely dependent, is reflected in the public interest taken in such announcements that General Motors hires 3,500 additional employees, Henry Ford hires 3,500 more workers, and similar encouraging news.

In an address on "A Program for Business: An America Free of Want", delivered October 20 in Boston, at the annual dinner of the Associated Industries of Massachusetts, Lammot du Pont, president, E. I. du Pont de Nemours & Company, said in part: "Today's common hope of eventual plenty for everybody is not a new vision by any means. Years prior to 1930, at a time when the subject was hardly of academic interest to practical politicians because of the seeming hopelessness of the task, the more progressive elements of free economic enterprise—of business—began seriously to weigh the possibility of eliminating want in America. More than that, progressive business began to do something about it. The results are history. They have astonished the world.

"The number of Federal employees, exclusive of the Army, Navy and emergency workers, was 48 per cent greater at the end of 1937 than in 1929, and the number of local and State employees was 15 per cent greater. Government expenditures—local, State and Federal—today equal almost one-third of the national income. Our public debt commitments of one kind or another are in excess of 65 billions of dollars, while the Federal deficit alone, aggregating $24,914,000,000 for the nine fiscal years 1931-1939, actually exceeds the total Federal Government expenditures from 1789 to 1913, a period of 125 years.

"The industrial system which has been charged with failure and impotence paid almost 90 billions of dollars in taxes to support the services of Government during the nine years 1930-1938. This is not a complaint. I am merely citing the facts that Government in America has expanded enormously during the depression, and that private enterprise has either paid the bill or signed its name to the note. Not Government, but economic enterprise has provided the money for relief. Not Government, but economic enterprise has financed the WPA, the Civilian Conservation Corps, the Home-Owners' Loan Corporation, the Agricultural Adjustment Administration, and all the rest of the alphabetical services that were inaugurated under the emergency of depression. Not Government, but economic enterprise stands behind the enormous public debt that has been incurred."

In touching on the subject of high wages and low prices, Mr. du Pont said in part: "High wages plus high prices mean nothing in the way of achievement. One balances the other and we stand still, if we do not in fact retrogress. For high prices limit production. However, high wages with low prices lead to greater prosperity. The wage dollar buys more, and more people can buy. Production rises and employment with it; new employment results in still more demand, more production and more employment. . . . What is chiefly misunderstood is that mass production can reduce costs only to a point, at which point it encounters obstacles, or fixed charges against it. One of these fixed charges is the investment in plant and equipment, upon which the investing public rightly expects a fair return. A second charge is the cost of raw materials. A third is the cost of distribution, and a fourth is taxes."

"The possibility of reducing the fixed charges against the productive system as such, represents our biggest hope of further lessening the cost of food, clothes, shelter, medicine and of all other articles that enter into living. Can these charges be reduced? They can be substantially reduced if, first, free enterprise is not destroyed as a consequence of a mistaken economic policy, and second, if it is given a fair opportunity to carry on to its manifest destiny."

In commenting on the achievements of science,

the speaker said in part: "The belief that no material can be as good as that naturally produced is one of the oldest and most deeply rooted popular fallacies. Natural materials, with which we have been forced to work almost exclusively until very recent years, have never been wholly satisfactory as industrial raw materials. They are irregular in quality, heavy when industry would prefer them light, soft when they should be hard, solid when a liquid form would save unending expense. The chemically pure is rare in nature. Many badly needed materials have never been found in nature at all. Twenty-five years ago there were few industrial research laboratories in America worthy of the name. The number today exceeds 1,600 in which upward of 30,000 persons are employed. Private enterprise is expending more than $800,000 every working day on research. The mere fact that there is still room for improvement is not an indictment, but a reassuring promise of a brighter tomorrow."

In pointing out that the burden of taxes is increasing, Mr. du Pont said in part: "The rise in taxes represents the most phenomenal ascension in costs against production and living of which there is any statistical record. Total Government expenditures in 1938 are fully twelve times those of 1900, and the total Government debt is approximately twenty times greater, although the population is less than twice as large. Expressed in terms of individual citizens—men, women, and children—it is estimated that governmental expenditures today are at the rate of $560 a year per American family. Standing as a fixed charge against the production of goods, every penny of these expenses is reflected in costs to the consumer, poor and rich alike. They are in *addition* to the value of the article or the service supplied now, and the unpaid portion of them stands as a first mortgage against the economic lives of our children and grandchildren."

"Taxes are inescapable. They are everybody's problem. A great many people think that present taxes are bound to go higher and become an even heavier burden upon living. And they doubt if anything can be done about it. I think something can and should be done about improving our tax system, not for the benefit of a few but for the common good and for the nation's economic security. There are today more than 175,000 taxing units in the country. . . . To my knowledge nobody has had the hardihood to undertake a computation of the number of taxes collected, but a suggestion of the total may be gained from the estimate of a Chicago company that there are no less than 58 separate taxes entering into the price of a loaf of bread. The tax system should be simplified and coordinated. It has been estimated that the taxing units could be reduced to a tenth of the existing number. Feeling is growing that a redistribution of taxes is in order that will encourage savings, instead of penalizing them, but a will to reduce taxes would encourage saving still more—and saving for the purpose of reinvestment in new enterprise is mandatory if we are to increase employment and secure our future."

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Months	1938(c)	1937(c)	1936	1935	1934
January	63.9%	90.3%	76.1%	65.8%	.....
February	68.7%	90.1%	77.9%	70.0%	.....
March	69.6%	90.3%	76.0%	70.5%	.....
April	68.3%	92.1%	82.3%	70.0%	.....
May	69.0%	90.6%	81.6%	69.4%	.....
June	66.0%	87.3%	80.7%	72.3%	.....
July	72.0%	81.8%	77.3%	64.9%	.....
August	77.2%	82.9%	81.5%	70.9%	.....
September	76.2%	78.6%	80.5%	71.9%	58.2%
October	.....	73.5%	87.6%	75.6%	64.7%
November	.....	61.9%	88.0%	75.3%	61.7%
December	.....	54.5%	85.9%	71.2%	59.6%
Year Average	.....	80.6%	81.3%	80.5%	.....
First 42 weeks	70.9%	86.0%	80.0%	69.8%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1938		CORRESPONDING WEEKS, 1937	
*September 17	79.6%	September 18	82.7%
*September 24	78.5%	September 25	81.9%
*October 1	80.9%	October 2	79.1%
*October 8	81.6%	October 9	77.0%
*October 15	82.5%	October 16	74.8%
*October 22	83.2%	October 23	73.6%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks					
Ratio Limits	Sept. 17, 1938	Sept. 24, 1938	Oct. 1, 1938	Oct. 8, 1938	Oct. 15, 1938	Oct. 22, 1938
0% to 50%	74	110	71	55	56	43
51% to 100%	233	196	233	245	213	159
Total Mills Reporting	307	306	304	300	269	202

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported by individual companies.

Paperboard Operating Ratios

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours", were as follows:

Mos.	1938 (e)	1937 (e)	1936	1935	Mos.	1938 (e)	1937 (e)	1936	1935
Jan.	55%	80%	61%	61%	July	57%	67%	69%	59%
Feb.	61%	86%	67%	67%	Aug.	66%	74%	75%	65%
Mar.	60%	87%	68%	67%	Sept.	66%	70%	76%	69%
Apr.	57%	89%	70%	61%	Oct.	.....	66%	82%	76%
May	58%	86%	68%	61%	Nov.	.....	56%	79%	70%
June	56%	75%	68%	65%	Dec.	.....	46%	74%	60%

Week end. Sept. 17, 1938—71%
Week end. Sept. 24, 1938—68%
Week end. Oct. 1, 1938—69%
Week end. Oct. 8, 1938—70%
Week end. Oct. 15, 1938—70%
Week end. Oct. 22, 1938—70%

(e) Basic figures revised to include new members of the National Paperboard Assn.

Sears Hallett Outlines Sales Program

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 31, 1938.—Sears Hallett, sales manager, and Irving Steller, of the Sherman Paper Products Corporation, gave highly interesting discussions on their coming sales program at a sales meeting at the office of Carter, Rice & Co., Corp., Saturday morning. The discussions covered a packaging survey conducted for one of the largest corporations in the country. Flexibility, variety of weights and water repellent features of Corroflex were thoroughly considered and demonstrated. An unusual exhibition was shown. Streeter Bush, assistant sales manager of the wrapping paper department of Carter. Rice & Co., Corp., presided.

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SULPHATE OF ALUMINA

Cyanamid Sulphate of Alumina is the result of the use of our own raw materials under continuous control in Cyanamid laboratories. High-grade bauxite from the Company's own mines, sulphuric acid of only the highest quality, and the purest of other materials are combined to produce a superior product. You will find its superiority evident from the first trial. Our representatives will be glad to discuss your special requirements with you and see that they are met with promptness and economy.

American Cyanamid & Chemical Corporation

30 ROCKEFELLER PLAZA, NEW YORK, N. Y.

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

United States Patents on Paper Making

Third Quarter, 1938

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent office. Since, as a rule, only one claim is published in the Gazette, it is not claimed that the list is complete.

Copies of any of the following patents may be obtained from the U. S. Patent office, Washington, D. C., by sending ten cents ($0.10) for each patent desired. Personal checks and postage stamps are not accepted in payment for patents. Books of coupons containing 20 or 100 coupons may be purchased for $2.00 or $10.00, respectively.

JULY 5, 1938

2,122,394. Thin stock process and apparatus for making paper. Carlton H. Allen, Glens Falls, N. Y. Filed Oct. 6, 1936. 3 claims. (Cl. 92-46). A method of regulating the consistency of pulp after screening.

2,122,475. Pulp screening machine. Nelson M. Knight, Weymouth Heights, Mass. Filed Jan. 3, 1936. 17 claims. (Cl. 92-34). A screen having baffle plates, pulsating plates between the baffle plates, which is located between the pulp inlet and outlet.

2,122,510. Apparatus for making sealed packages. Samuel Bergstein, Cincinnati, Ohio, assignor to Edna May Bergstein and Robert Morris Bergstein, as trustees. Filed Oct. 8, 1935. 12 claims. (Cl. 91-51). Apparatus for sealing cartons.

2,122,543. Container coatings. William J. Tomsicek, Lloyd L. Dodge and Jose B. Calva, assignors to Dodge Chemical and Manufacturing Company, Chicago, Ill. Filed Aug. 15, 1934. 3 claims. (Cl. 91-68). The coating comprises 65 per cent of ester gum, 11 per cent of Japan wax and 24 per cent of petrolatum.

2,122,592. Woven wire belt for paper making machines. Harry G. Specht, assignor to Encor Corporation, Belleville, N. J. Filed June 4, 1936. 3 claims. (Cl. 139-425). Woven wire fabric comprising interwoven warp and weft wires with knuckles produced in both the warp and weft wires.

2,122,739. Apparatus for coating and slating roofing shingles. William G. Dudleston, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed July 24, 1935. 8 claims. (Cl. 91-43).

2,122,747. Roofing felt. Lester Kirschbraun, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed Dec. 31, 1936. 6 claims. (Cl. 108-7). A sheet of roofing felt comprising a body portion and a plurality of tabs, the tabs being displaceable from the plane of the body portion to permit the escape of entrapped gases and the like occurring in the laying of the roofing covering.

2,122,774. Stencil sheet. Shinjiro Horii, Kanda-Ku, Tokyo, Japan. Filed May 7, 1937. 4 claims. (Cl. 41-38.6). The coating consists of an organic colloid, an oily softening agent and an activated Japanese acid clay.

2,122,862. Colored roofing. Carl E. Hillers, assignor to Blue Ridge Slate Corporation, Charlottesville, Va. Filed Dec. 30, 1936. 9 claims. (Cl. 91-70).

2,122,907. Process of making a greaseproof container. Jose B. Calva, assignor to General Products Corporation, Minneapolis, Minn. Filed April 27, 1935. 1 claim. (Cl. 91-70). The interior surface of the container is coated with a mixture of animal glue, glycerine, formaldehyde and water and heated above the reaction temperature of formaldehyde and glue.

2,123,028. Method of making colored asbestos-cement products. Mikael Vogel-Jorgensen, assignor to F. L. Smidth & Company, New York, N. Y. Filed June 16, 1936. 6 claims. (Cl. 92-21).

JULY 12, 1938

R20,789. Method of forming containers. Robert M. Bergstein, Cincinnati, Ohio, assignor to Edna May Bergstein and himself, as trustees. Original No. 2,095,910, dated Oct. 12, 1937. Application for reissue April 26, 1938. 18 claims. (Cl. 93-36.01).

2,123,173. Alkaline earth filler. Otto Kress and Charles E. Johnson, assignors to The Institute of Paper Chemistry, Appleton, Wis. Filed March 27, 1936. 7 Claims. (Cl. 134-58). Method of coating alkaline earth material with a film of a wax-like material.

2,123,252. Machine for booking matches. John R. Nolan, assignor to The Diamond Match Company, Wilmington, Del. Filed July 8, 1936. 11 claims. (Cl. 93-2).

2,123,354. Coating size on a paper strip. Gaston Corse, assignor to Société dite "Anciens Etablissements L. Chambon," Paris, France. Filed Feb. 9, 1934. 1 claim. (Cl. 91-12). An apparatus for coating a strip of paper with gum.

2,123,399. Method of making washable paper. Charles G. Bright, assignor to Paper Patents Company, Neenah, Wis. Filed May 2, 1935. 4 claims. (Cl. 92-40). Forming a paper web carrying a water-resistant protein coating, applying during papermaking operation a substance to fix coating, drying, then softening the dried coating and printing on coating with a water-insoluble ink.

2,123,438. Method of producing open mesh bags. Wade E. Sackner and John E. Millett, Grand Rapids, Mich. Filed March 18, 1937. 1 claim. (Cl. 139-389).

2,123,487. Match-strip feeding mechanism for match booking machines. Lucian E. Parker, assignor to The Diamond Match Company, New York, N. Y. Filed Feb. 27, 1937. 5 claims. (Cl. 93-2).

2,123,508. Bag machine. John Koenig, assignor to Benjamin C. Betner Company, Devon, Pa. Filed March 15, 1937. 6 claims. (Cl. 93-27).

2,123,548. Envelope machine. Ernest C. Sauerman, Chicago, Ill. Filed Dec. 7, 1935. 10 claims. (Cl. 93-62).

2,123,760. Laminated paper. Van Hamm Wilshire, assignor to The Specialty Papers Company, Dayton, Ohio. Filed June 16, 1934. 8 claims. (Cl. 154-50). A sheet of glassine paper and a thicker sheet of smooth finish wax absorbent paper of a weight of the order of 50 pounds or less per ream of 24x36" per sheet held to the glassine sheet merely by an intermediate layer of wax which is also absorbed for some distance into the wax absorbent paper, the laminated material having a surface coating of wax applied directly to the glassine sheet.

JULY 19, 1938

R20,802. Apparatus for the production and manufacture of material impregnated with cellulose regenerated from viscose or other cellulosic solutions. Arthur Hugoe Kilner, St. John's Wood, London, England. Original No. 1,892,579, dated Dec. 27, 1932. Application for reissue Jan. 3, 1935. 20 claims. (Cl. 91-17).

2,124,028. Process and apparatus for the manufacture of paper. Edgar Alexander Charlton, assignor to International Paper Company, New York, N. Y. Filed Dec. 17, 1934. 1 claim. (Cl. 92-45). A shake beneath the screen of a Fourdrinier having plungers which are mounted for reciprocation in cylinders.

2,124,055. Abrasive article. Robert P. Courtney, assignor to Bakelite Corporation, New York, N. Y. Filed May 18, 1934. 14 claims. (Cl. 51-278).

2,124,103. Method of an apparatus for felting fibrous articles. Jerome J. Blum, assignor to Arveyware Corporation, Olean, N. Y. Filed Aug. 31, 1936. 5 claims. (Cl. 92-54). Method of forming shingles.

2,124,209. Process and machine for making bags. George W. Poppe, assignor to Equitable Paper Bag Co., Inc., Brooklyn, N. Y. Filed July 31, 1936. 5 claims. (Cl. 93-18).

2,124,256. Process for the treatment of cellulosic fibrous materials. Erwin Mayer, Skoghall, Sweden. Filed Sept. 28, 1934. 2 claims. (Cl. 8-139). The material is subjected to the action of an aqueous caustic alkaline solution to which a small proportion of methylene blue has been added.

2,124,330. Surfacing felted fibrous material. Truman A. Pascoe and Roy P. Hella, assignors to Cellovis, Inc., Wilmington, Del. Filed Jan. 23, 1935. 2 claims. (Cl. 92-21). The method comprises felting into a paper product a slurry of fibers containing finely divided cellulose derivative distributed throughout said slurry and applying to the surface of said paper product a coating composition containing cellulose derivative in a solvent which has a softening effect upon the cellulose derivative in the sheet and drying the coated sheet.

2,124,393. Refiner. Raymond C. Benner and Albert L. Ball, assignors to the Carborundum Company, Niagara Falls, N. Y. Filed Nov. 14, 1935. 1 claim. (Cl. 92-27). The refiner consists of a metal shell and bonded abrasive blocks as lining, the blocks being attached to the shell by a layer of tough, resilient, vulcanized rubber.

JULY 26, 1938

2,124,582. Art and machine for working paper. Douglas M. McBean, assignor to The Paper Service Company, Lockland, Ohio. Filed Feb. 1, 1933. 12 claims. (Cl. 154-30). Apparatus for forming longitudinal corrugations in the stock.

2,124,745. Manufacture of insulation forms. John W. Morgan, Detroit, Mich. Filed March 22, 1933. 2 claims. (Cl. 92-58). Apparatus for molding insulation forms.

2,124,855. Paper handling machine. Reuben Hitchcock, (assignor to Dexter Folder Company, New York, N. Y. Filed October 10, 1928. 5 claims. (Cl. 271-52). A feed table.

2,125,076. Process of producing pigmented paper and impregnating it with a resinous binder and the product. Gerald H. Mains, assignor to Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. Filed Dec. 12, 1933. 9 claims. (Cl. 154-2). A molded laminated product comprising a plurality of sheets of paper impregnated with a resinous binder suitable for molding, a sheet of paper having a pigment dispersed throughout the body thereof and impregnated with a resinous binder superimposed on the other sheets, all of the sheets being molded into a unitary structure.

2,125,241. Gummed paper product. Ferdinand W. Humphner, assignor to Mid-States Gummed Paper Co., Chicago, Ill. Filed May 20, 1936. 8 claims. (Cl. 91-68). A vegetable glue is applied to the paper and to this is applied an animal glue which has been formed, dried and pulverized.

AUGUST 2, 1938

2,125,298. Hydraulic beating apparatus. Richard D. Kehoe, assignor to Paper Industrial Appliances Inc., New York, N. Y. Filed July 30, 1935. 10 claims. (Cl. 92-20). In a hydraulic beater, opposed nozzles, a movable structure arranged between said nozzles and having target faces for engagement by jets from said nozzles.

2,125,306. Manufacture of satchel bottom bags. Abraham Novick, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed May 5, 1933. 9 claims. (Cl. 93-35).

2,125,307. Bag making machine. Abraham Novick, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed July 13, 1934. 39 claims. (Cl. 93-14).

2,125,308. Means for and method of applying a patch to a satchel bottom bag. Abraham Novick, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed Aug. 2, 1934. 16 claims. (Cl. 93-27).

2,125,336. Machine for handling strip material. Joseph Ettl, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed April 24, 1936. 13 claims. (Cl. 91-18).

2,125,341. Coated fabric and process of making same. Carroll B. Hall and John Dorman McBurney, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Oct. 10, 1934. 5 claims. (Cl. 154-2). Method of applying a metallic powder to a fabric coated with a cellulose derivative.

2,125,364. Apparatus for drying and impregnating. Frederick A. Waldron, Westfield, N. J. Filed Feb. 18, 1930. 6 claims. (Cl. 91-55).

2,125,414. Machine for forming tubular sheet-material bodies. Charles L. Baker, assignor to Jet D. Sheetz, Lancaster, Pa. Filed Aug. 24, 1937. 19 claims. (Cl. 93-44.1).

2,125,415. Device for applying closure mouths to bottle bodies. Charles L. Baker, assignor to Jet D. Sheetz, Lancaster, Pa. Filed Aug. 24, 1937. 9 claims. (Cl. 93-55.1).

2,125,416. Device for applying closure bottoms to tubular containers. Charles L. Baker, assignor to Jet D. Sheetz, Lancaster, Pa. Filed Aug. 24, 1937. 9 claims. (Cl. 93-55.1).

2,125,417. Paper milk bottle. Charles L. Baker, assignor to Jet D. Sheetz, Lancaster, Pa. Filed Aug. 24, 1937. 2 claims. (Cl. 229-5.5).

2,125,430. Method of and machine for manufacturing boxes. Paul Wilhelm Dietmann, assignor to Aktiebolaget Siefvert & Fornander, Kalmar, Sweden. Filed May 7, 1936. 16 claims. (Cl. 93-44).

2,125,527. Coating of absorbent materials. George Crawford Tyce and Victor Lefebure, assignors to Imperial Chemical Industries Limited. Filed April 2, 1937. 7 claims. (Cl. 91-68). Method of producing a coated material with a glossy surface by the use of a resin dispersion.

2,125,529. Apparatus for barking logs. Johan Daniel Ullgren, assignor to Ruths-accumulators Nordisks Aktiebolaget, Stockholm, Sweden. Filed Nov. 7, 1935. 4 claims. (Cl. 144-208).

2,125,634. Method of bleaching pulp or paper webs. Clark Cable Heritage, assignor to Oxford Paper Company, Rumford, Maine. Filed March 29, 1937. 12 claims. (Cl. 8-2). A solution of hydrogen peroxide is applied to at least one side of the web at a point in advance of the dry end of the drier whereby the heat of at least a portion of the drier is utilized to render the hydrogen peroxide active to bleach the web.

2,125,639. Apparatus for determining the opacity of paper and other materials. Otto Maass and Ronald E. Richardson, assignors to The Canadian Pulp and Paper Research Corporation, Montreal, Quebec, Canada. Filed Oct. 16, 1935. 4 Claims. (Cl. 88-14).

2,125,717. Wire fabric and method of making the same. Raymond J. Guba, assignor to Audubon Wire Cloth Corporation, Philadelphia, Pa. Filed May 20, 1937. 19 claims. (Cl. 245-6).

2,125,758. Machine for manufacturing bags. Harry F. Waters, New York, N. Y. Filed May 8, 1935. 7 claims. (Cl. 93-2).

2,125,794. Machine for making bags. Frank Magidson, assignor to Pittsburgh Tag Company, Pittsburgh, Pa. Filed May 7, 1937. 11 claims. (Cl. 93-87).

2,125,820. Apparatus for continuously beating paper pulp. Ralph J. Serpas, Minneapolis, Minn. Filed Aug. 24, 1936. 4 claims. (Cl. 92-25). The pulp passes between a series of rolls and stationary bars.

2,125,847. Laminated pressed wallboard. John H. McKenzie, assignor to Marbon Corporation, Chicago, Ill. Filed June 13, 1936. 7 claims. (Cl. 154-45.9). A composite article comprising a lamina of fiber board containing a wood resin and a lamina of a composition containing a halogenated rubber derivative.

2,125,848. Cup making machine. Albert F. Miller, assignor to Lily-Tulip Cup Corporation, New York, N. Y. Filed Sept. 13, 1935. 12 claims. (Cl. 93-36.5).

AUGUST 9, 1938

2,125,947. Manufacture of midsoles. Izador J. Novak, assignor to Raybestos-Manhattan, Inc., Bridgeport, Conn. Filed Feb. 4, 1935. 5 Claims. (Cl. 92-40). A leather substitute comprising a felted fibrous product exhibiting a relatively low degree of fiber hydration of wet machine-laminated construction associated with a bonding medium consisting essentially of 15 to 35 per cent rubber and containing approximately 5 to 10 per cent water-insoluble soap.

2,126,117. Manufacture of containers made of paper and similar materials. Otto Kasdorf, Montevideo, Uruguay. Filed July 8, 1937. 9 claims. (Cl. 93-60). A device for stamping folding grooves and folding edges for the folding closure of containers made of paper and similar materials.

2,126,192. Greaseproof gummed paper. Ferdinand W. Humphner, assignor to Mid-States Gummed Paper Company, Chicago, Ill. Filed Sept. 30, 1935. 5 claims. (Cl. 91-68). Paper having at least one side coated with a water-insoluble oil-resistant lacquer, a water-soluble adhesive on said lacquer and an organic solvent for said lacquer.

2,126,193. Packaging machine. William A. Joplin, assigned to Pneumatic Scale Corporation, Limited, Quincy, Mass. Filed April 21, 1937. 13 claims. (Cl. 93-44.1). A carton sealing machine.

2,126,264. Machine for refining paper stock. William V. Knoll, assignor to Mid-West-Fulton Machine Company, Dayton, Ohio. Filed July 8, 1936. 3 claims. (Cl. 92-24). A nozzle structure for directing separate streams of stock under high velocity tangentially against the blades at the edge of the bedplate.

2,126,350. Backing paper for roll coating film. Paul C. Seel, assignor to Eastman Kodak Company, Rochester, N. Y. Filed April 3, 1937. 3 claims. (Cl. 95-9). An opaque paper coated with a layer of cellulose ethyl ether having an ethoxyl content of about 49 per cent.

2,126,486. Paper machine. Bernard A. Malkin, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada. Filed Sept. 30, 1936. 6 claims. (Cl. 74-421). Spindle driving mechanism.

2,126,504. Sensitized blue print paper and coating therefor. Alger P. Reynolds, assignor to Spaulding-Moss Company, Boston, Mass. Filed Aug. 21, 1937. 1 claim. (Cl. 95-7). The coating contains an acid-hydrolyzable alkali metal phosphate, a light-sensitive iron salt in the ferric state and an alkali metal ferrocyanide.

2,126,520. Adhesive for labels and method of making same. Louis K. Wakeman, assignor to International Patent Development Company, Wilmington, Del. Filed Feb. 1, 1936. 12 claims. (Cl. 134-23.4). An adhesive paste which when cooked with water is capable of adhering to an oily surface composed of tapioca dextrin.

2,126,556. Manufacture of tubular paper structure. Everett C. Hughes, assignor to The Standard Oil Company (Ohio), Cleveland, Ohio. Filed May 31, 1935. 10 claims. (Cl. 91-55).

AUGUST 16, 1938

2,126,774. Method of making collapsible boxes. Hutchinson S. Hinkle, assignor to National Folding Box Company, New Haven, Conn. Filed June 28, 1937. 10 claims. (Cl. 93-49).

2,126,804. Machine for making window envelopes. Elmer G. Overly, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed Dec. 8, 1931. 10 claims. (Cl. 93-61).

2,126,872. High temperature saturating or coating apparatus. Harry A. Cumfer, Glen Ellyn, Ill. Filed Nov. 7, 1935. 16 claims. (Cl. 91-46).

2,126,908. Apparatus for and method of sealing bags. Stuart Moore, assignor to Dixie Wax Paper Company, Dallas, Texas. Filed June 12, 1935. 5 claims. (Cl. 154-42). Manufacture of paper bags from wax coated material and method of sealing the seam in a moving formed bag webbing having overlapping edges.

2,126,920. Bag making machine. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed March 14, 1935. 26 claims. (Cl. 93-22).

2,126,921. Bag making machine. Adoph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed Aug. 20, 1936. 4 claims. (Cl. 93-8).

2,126,922. Method of making paper products. F. Warner Robinson, New York, N. Y. Filed May 27, 1935. 3 claims. (Cl. 92-40). Method of securing a tearing element to paper.

2,126,934. Apparatus for conditioning containers. Harden F. Taylor and Alexander H. Cooke, assignors to The Atlantic Coast Fisheries Company, New York, N. Y. Filed July 12, 1935. 10 claims. (Cl. 99-234). Air saturated with steam is passed into a chamber containing containers formed of corrugated material and while in the collapsed state.

2,127,131. Die for the production of box blanks. Carl A. Moeller, assignor to Mary R. Claff and C. Lloyd Claff, trustees, Randolph, Mass. Filed April 16, 1937. 14 claims. (Cl. 93-58).

2,127,180. Cap form waxing device for use in a paper bottle capping machine. Irving F. Mandell, assignor to Reinforced Paper Bottle Corporation, New York, N. Y. Filed Sept. 29, 1936. 2 claims. (Cl. 91-46).

2,127,183. Heat sealing device. Stuart Moore, assignor to Dixie Wax Paper Company, Dallas, Texas. Filed Sept. 30, 1937. 4 claims. (Cl. 219-19). Heat sealing device for a machine for making bags or the like containers from a web having overlapping edges.

2,127,419. Sheet separator for envelope machines. John L. Oberender and William H. Blessing, assignors to Oles Envelope Corporation, Baltimore, Md. Filed May 25, 1937. 14 claims. (Cl. 271-1).

2,127,432. Paper cutting machine. Frederick W. Seybold, assignor to American Type Founders Incorporated, Elizabeth, N. J. Filed Nov. 7, 1936. 46 claims. (Cl. 164-54).

2,127,451. Hardening and waterproofing composition for concrete or mortar. Edward W. Scripture, Jr., assignor to The Master Builders Company, Cleveland, Ohio. Filed Jan. 17, 1936. 13 claims. (Cl. 106-27). The mortar or concrete contains 0.05 to 0.3 per cent by weight of finely divided sulphite waste liquor residue.

AUGUST 23, 1938

2,127,563. Paper cutting machine. George W. Johnston, Astoria, N. Y. Filed Oct. 20, 1936. 9 claims. (Cl. 164-41).

2,127,568. Envelope machine. Abraham Novick, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed Jan. 9, 1936. 11 claims. (Cl. 271-76).

2,127,698. Paper making machine. Nickolas J. Nicks, Munising, Mich. Filed Aug. 26, 1936. 5 claims. (Cl. 92-44). Forming a sheet of paper on the wire of a Fourdrinier machine by coming in contact with the outer periphery of the breast roll and controlled by a series of slices adjacent the vertical portion of the wire passing over the roll.

2,127,765. Bleaching pulp. Ferri Casciani, assignor to Niagara Alkali Company, Niagara Falls, N. Y. Filed July 23, 1937. 3 claims. (Cl. 8-105). Treating pulp with free chlorine, washing with water, treating with additional chlorine, then making the pulp alkaline to form hypochlorite, removing liquor, washing, and bleaching with hypochlorite liquor.

2,128,023. Suction box conditioner. Harry G. Specht and Nelson W. Webb, assignors to Eastwood-Nealley Corporation, Belleville, N. J. Filed March 8, 1937. 5 claims. (Cl. 51-56).

2,128,027. Recovery of sulphur dioxide from gas mixtures. Arthur Maurice Clark, assignor to Imperial Chemical Industries, Limited. Filed April 14, 1938. 10 claims. (Cl. 23-178.) The absorbent consists of a mixture of an aqueous medium and a substantually water-insoluble liquid inorganic base,

2,128,190. Machine for producing coated material. Ralph W. B. Reade, assignor to United States Gypsum Company, Chicago, Ill. Filed Nov. 28, 1934. 9 claims. (Cl. 91-31).

2,128,191. Roofing. Frank P. Reynolds, assignor to Bird & Son, Inc., East Walpole, Mass. Filed June 19, 1937. 4 claims. (Cl. 91-68). Ornamental roofing.

2,128,197 Box or carton and blank therefor. William H. Weil, assignor to Stransky Products Corporation, New York, N. Y. Filed Oct. 3, 1936. 2 claims. (Cl. 206-44).

2,128,214 Method of producing coated material. Ralph W. B. Reade, assignor to United States Gypsum Company, Chicago, Ill. Filed Sept. 27, 1937. 5 claims. (Cl. 91-68).

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2,128,269. Means and method of vibrating the wire of a paper-making machine. Edward W. Smith, assignor to Submarine Signal Company, Boston, Mass. Filed Sept. 16, 1935. 9 claims. (Cl. 92-45).

2,128,296. Coated paper. Virginia Baker Goodwin and William H. Pashley, New York, N. Y. Filed Feb. 26, 1937. 6 claims. (Cl. 91-68). The fibers are impregnated with ammonium sulphate; a network of glycerinated gelatin protects the flameproofing compound and retains it in the fibers and whole is waterproofed with a rubber coating.

2,128,464. Process of making mixtures containing bituminous dispersions. Lester Krischbraun, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed Aug 22, 1931. 1 Claim. (Cl. 106-31). The material to be waterproofed is pretreated with a solution of an emulsion stabilizer and then mixed with a quick-breaking aqueous emulsion of a waterproofing agent substantially free of colloidal powders.

2,128,482. Method of preparing a size. William Harry Harding, assignor to American Cyanamid & Chemical Corporation, New York,

N. Y. Filed June 25, 1935. 5 claims. (Cl. 134-21). A mixture of solid rosin, solid alkali, and a solution of alkali, the quantity of solid alkali being greater than that which will dissolve in the solution of alkali at the mixing temperature, there being insufficient water to give a liquid product in which the total alkali used is sufficient to saponify the rosin, the dry alkali constituting from 10 to 50 per cent of the total.

2,128,588. Decalcomania paper. John MacLaurin, Ware, Mass. Filed Dec. 11, 1935. 7 claims. (Cl. 41-33). The backing layer is a sheet of waterproof paper containing dye in sufficient quantity to impart a distinctive color to the paper and a layer of adhesive coating thereon to receive decalcomania printing.

2,128,652. Transparent coated sheet material. Edouard M. Kratz, Eugene W. Moffett and Erich Gebauer-Fuelnegg, assignors to Marbon Corporation, Chicago, Ill. Filed April 26, 1934. 6 Claims. (Cl. 91-68). A regenerated cellulose film surfaced on one side with a thin, readily fusible, non-tacky skin of a composition essentially comprising rubber hydrochloride.

2,128,739. Laminated glassine paper. Cornelius M. Connor, assignor to The Glassine Paper Company, West Conshohocken, Pa. Filed July 6, 1935. 6 claims. (Cl. 154-46). Sheets of glassine paper are joined by an intermediate film substantially confined to the inner surface of the sheets and comprising primarily a water-insoluble resinous material and wax.

2,128,745. Apparatus for forming pulp articles. Ernest Huff and Andrew Keiding, assignors to American Lace Paper Company, Milwaukee, Wis. Filed Dec. 2, 1935. 19 claims. (Cl. 92-54). Apparatus for manufacturing containers of desired form from pulp blanks.

2,128,746. Sanitary napkin machine. Curt G. Joa, assignor to Curt G. Joa, Inc., Manitowoc, Wis. Filed Dec. 5, 1936. 9 claims. (Cl. 164-68).

2,128,782. Process of manufacturing non-inflammable articles of organic fibrous materials. Bernhard Mueller, assignor to Rutgerswerke-Aktiengesellschaft, Berlin, Germany. Filed Oct. 26, 1936). 7 claims. (Cl. 92-21). Pulp is treated with a solution containing ammonium hydroxide and a water-soluble salt of phosphoric acid and then with a water-soluble metal salt of fluosilicic acid to precipitate a water-insoluble metal ammonium phosphate and silicic acid.

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R20,845. Moistureproof article. William Hale Charch, Nerlin Martin Brubaker and Frederick M. Meigs, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Original No. 2,098,538, dated Nov. 9, 1937. Application for reissue May 10, 1938. 11 claims. (Cl. 91-68).

R20,847. Moistureproof material and method of making the same. Theron G. Finzel and Donald E. Drew, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Original No. 2,108,809, dated Feb. 22, 1938. Application for reissue July 13, 1938. 19 claims. (Cl. 91-70).

2,128,905. Coated abrasive product and method of manufacturing the same. Raymond C. Benner and Romie L. Melton, assignors to The Carborundum Company, Niagara Falls, N. Y. Filed Feb. 6, 1935. 9 claims. (Cl. 51-278).

2,128,906. Production of flexible abrasive articles. Raymond C. Benner and Romie L. Melton, assignor to The Carborundum Company, Niagara Falls, N. Y. Filed Dec. 20, 1935. 3 claims. (Cl. 91-70).

2,128,907. Method of making abrasive coated material. Raymond C. Benner and Romie L. Melton, assignors to The Carborundum Company, Niagara Falls, N. Y. Filed Oct. 8, 1936. 4 claims. (Cl. 51-278).

2,128,928. Art of fiber liberation. Joseph H. Estes, assignor to J. Weston Allen and Everett E. Kent, Newton, Mass. and Henry W. Packer, Wellesley, Mass. Filed June 29, 1932. 10 claims. (Cl. 92-14). Decorticated natural fiber bundles are treated with a boiling solution of 0.2-0.5 per cent neutral soap and 0.4 per cent of sodium carbonate.

2,128,965. Art of making leatherboard. Herman W. Richter, assignor to George O. Jenkins Company, Bridgewater, Mass. Filed March 31, 1936. 6 claims. (Cl. 8-2). Leatherboard containing iron-tannate inks is treated with a solution containing phosphoric acid.

2,128,966. Coated abrasive article and method of making the same. Norman Pierce Robie, assignor to The Carborundum Company, Niagara Falls, N. Y. Filed Feb. 7, 1935. 4 claims. (Cl. 51-278).

2,128,982. Package making machine. Frederick E. Bickford, Rye, N. Y. Filed Aug. 17, 1937. 18 claims. (Cl. 93-39).

2,129,156. Coating composition. Elmer W. Trolander and William Courtney Wilson, assignors to Pyroxylin Products, Inc., Chicago, Ill. Filed April 10, 1936. 12 claims. (Cl. 134-79). A coating composition to protect cellulose against thermal decomposition, containing ethylcellulose as an essential ingredient and a modifying agent, such as an ester of a polyhydric alcohol and a dicarboxylic acid.

2,129,190. Paper propagating pot. Martin Leatherman, Hyattsville, Md., dedicated to the public. Filed Feb. 24, 1938. 5 claims. (Cl. 47-37). The paper is impregnated with copper resinate.

2,129,249. Apparatus for sizing photographic paper. John C. Trahey, assignor to Eastman Kodak Company, Rochester, N. Y. Filed March 27, 1937. 7 claims. (Cl. 91-46). A means for mixing steam and air before they are passed into a gas chest associated with the tank containing the sizing solution.

2,129,256. Method of making insulating tubes. Armais Arutunoff, assignor to Reda Pump Company, Bartlesville, Okla. Filed Nov. 4, 1937. 3 claims. (Cl. 93-94).

2,129,362. Safety paper and method of making safety paper. Francis L. Simon and Mark W. Weiss, assignors to George La Monte & Son, Nutley, N. J. Filed Nov. 21, 1936. 20 claims. (Cl. 238-8). The paper comprises a surface layer and a sub-surface layer of a contrasting color, a portion of the surface layer being more permeable to light when a liquid is applied thereto.

2,129,363. Safety paper and method of making same. Francis L. Simon and Mark W. Weiss, assignors to George La Monte & Son, Nutley, N. J. Filed Nov. 21, 1936. 11 claims. (Cl. 283-8). The material presents a surface of a color other than white and indica overlying a plurality of portions of said surface, the indica becoming more permeable to light when a liquid is applied thereto.

2,129,370. Coated fibrous sheet and web material and process for making same. Erich Gebauer-Fuelnegg, assignor to Marbon Corporation, Chicago, Ill. Filed Dec. 10, 1936. 4 claims. (Cl. 91-68). A regenerated cellulose sheet coated with a rubber hydrochloride and one or more substances from the group of waxes and resins consisting of paraffin wax, chlorinated diphenyls, polycoumarone, rosin and dammar.

2,129,573. Manufacture of cartons, barrels and the like. Edgar Parr Gabbott, Chorlton-cum-Hardy, Manchester, and Rupert Peter Peters, Bollington, Altrincham, England. Filed Nov. 10, 1937. 9 claims. (Cl. 93-81). A power-driven machine operating in a repeating cycle for winding paper into tubes for barrels, cartons and the like.

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2,129,659. Insectproof paper. Newton P. Easling, Pekin, Ill. Filed July 22, 1926. 1 claim. (Cl. 91-68). The felt base is saturated with a mixture of 25 per cent arsenate of lead, 73 per cent asphalt paint, 1 per cent nicotine sulphate and 1 per cent inert substances.

2,129,661. Composite abrasive sheet. Albert L. Ball, issignor to The Carborundum Company, Niagara Falls, N. Y. Filed Jan. 13, 1936. 4 claims. (Cl. 51-185). A web of relatively loose woven textile fabric having a coating of pulp from suspension deposited on and intermingled with one surface thereof, a filler, a layer of abrasive granules and affixed thereto by means of an adhesive.

2,129,686. Method of forming window envelopes or the like. Robert L. Gray, Brooklyn, N. Y. Filed June 14, 1933. 25 claims. (Cl. 93-61).

2,129,697. Mold and method of making the same. Felix Louisot, assignor to William M. Sheffield, New York, N. Y. Filed Oct. 18, 1935. 14 claims. (Cl. 92-54). A laminated die adapted to be immersed in a liquid pulp mixture for the suction formation of individual molded pulp articles.

2,129,789. Beater for paper stock. Charles R. Seaborne, Appleton, Wis. Filed April 3, 1936. 10 claims. (Cl. 92-25). A rotatable plate having beater knives for cooperating with the beater knives of the bowl and at least one scraper knife supported upon said bowl adjacent said rotary plate for preventing clogging of said knives during use of said machine.

2,129,842. Process and apparatus for the production of flat bags. Charles Holweg, assignor to Ateliers de Constructions Mechaniques C. A. Holweg, Strasbourg, France. Filed May 17, 1935. 11 claims. (Cl. 93-18).

2,130,060. Method and apparatus for coating paper and the like. Russell S. Bracewell, South Hadley, Mass. Filed Aug. 26, 1935. 15 claims. (Cl. 91-44). A spirally grooved roll slightly spaced from the transfer roll to receive the color therefrom by centrifugal action and means to present the surface to be coated in close proximity to the spirally grooved roll to receive color therefrom by centrifugal action.

2,130,070. Light sensitive paper and method of treating same. Clyde A. Crowley and George H. Goodyear, assignors to The Huey Company, Chicago, Ill. Filed Nov. 5, 1937. 3 claims. (Cl. 95-6). A coating for blue print paper comprising a light-reducible ferric complex, a ferricyanide salt and a salt of an aliphatic nitrogen base.

2,130,071. Light sensitive paper and method of treating same. Clyde A Crowley and George H. Goodyear, assignors to The Huey Company, Chicago, Ill. Filed April 29, 1938. 3 claims. (Cl. 95-6). A coating for blue print paper comprising a light-reducible ferric salt, a ferricyanide salt and a cesium salt.

2,130,238. Cellulose derivative coating composition. Chad H. Humphries, assignor to Sealkote Corporation, Chicago, Ill. Filed Dec. 7, 1935. 2 claims. (Cl. 134-79). A combination of glycerol-phthalic acid synthetic resin and cellulose acetate, a plasticizer and a solvent.

2,130,241. Method of coating paper. James D. MacLaurin, assignor to Seaman Paper Company, Chicago, Ill. Filed June 18, 1934. 1 claim. (Cl. 91-68). A method of distributing a mobile film of coating material by impact of a sheet or fluid directed under relatively high velocity at an angle to the surface of the web.

2,130,332. Method and apparatus for winding paper. Charles Davis, assignor to West Virginia Pulp and Paper Company, New York, N. Y. Filed Dec. 1, 1936. 8 claims. (Cl. 242-55).

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2,130,355. Method of forming moistureproof and greaseproof containers. Donald G. Magill, assignor to American Can Company, New York, N. Y. Filed June 27, 1936. 2 claims. (Cl. 93-94). Method of forming a container with a metallic foil liner by means of a moistureproof and greaseproof lacquer.

2,130,375. Paper towel. Samuel F. Atkins, assignor to The Northwest Paper Company, Cloquet, Minn. Filed April 8, 1936. 1 claim. (Cl. 92-68). A sheet of felted fibers provided with holes therein and corresponding tongues integral with the sheet and torn from the areas of the holes.

2,130,402. Apparatus for chlorinating pulp. Clinton K. Textor, assignor to The Northwest Paper Company, Cloquet, Minn. Filed Dec. 11, 1935. 2 claims. (Cl. 261-93). Method for using chlorine gas.

2,130,530. Coating of fibrous surfaces. John Fletcher, assignor to Plastergon Wall Board Company, Buffalo, N. Y. Filed Oct. 5, 1935. 11 claims. (Cl. 91-70). The fibrous surface is pre-wetted with water, the wet surface is coated with a water dispersion of a nitrocellulose lacquer, the solvent is eliminated in a drying, humid atmosphere and the board is dried to remove the water.

2,130,550. Tanning matter. Ernst Koch, Karl Dachlauer and Christoph Thomsen, assignors to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany. Filed Dec. 28, 1936. 4 claims. (Cl. 149-5). The reaction product of a water-soluble sulphonate and an aqueous solution of chlorolignin, the resulting free acid being brown and non-hygroscopic powders showing a tanning effect upon animal skins.

2,130,605. Method of gumming and drying adhesive on flat surfaces. Edwan G. Staude, Minneapolis, Minn. Filed June 8, 1936. 4 claims. (Cl. 91-68). The use of a water-soluble liquid adhesive and a water-soluble dry powdered adhesive so as to quickly dry the wet adhesive during the rapid motion of the article through the machine and without the use of other drying means.

2,130,665. Method of and machine for drying or conditioning webs of paper and the like. Donald B. Bradner, assignor to The Champion Paper and Fibre Company, Hamilton, Ohio. Filed Sept. 18, 1935. 14 claims. (Cl. 34-48). Air is passed at high velocity over one side of the web, supporting this side of the web on a foraminous carrier and holding the web against the carrier by maintaining the static pressure of the high velocity air adjacent thereto substantially uniformly just below the pressure on the opposite side of the web.

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2,131,044. Method of making building material. Norman P. Harshberger and Sidney A. Ochs, assignors to Bakelite Building Products Co., Inc., New York, N. Y. Filed May 13, 1936. 9 claims. (Cl. 18-48). Shaped sheet material having spring bow characteristics.

2,131,097. Impregnated felt. Pieere Drewsen, assignor to The Barrett Company, New York, N. Y. Filed Nov. 16, 1935. 2 claims. (Cl. 92-3). A flexible felt sheet containing 15-45 per cent of fibers of relatively great strength (sulphite or kraft pulp) and from 55-85 per cent of fibers having high absorptive capacity (cooked with caustic alkali and alkaline sulphites) and impregnated with paterproofing material.

2,131,625. Carton sealing machine. William A. Joplin, assignor to Pneumatic Scale Corporation, Limited, Quincy, Mass. Filed April 21, 1937. 9 claims. (Cl. 93-6).

2,131,633. Carton lining machine. Arthur W. Lindholm, assignor to Pneumatic Scale Corporation, Limited, Quincy, Mass. Filed May 20, 1937. 13 claims. (Cl. 93-49).

2,131,668. Package wrapping machine. Philip D. Parsons, assignor to Scott Paper Company, Chester, Pa. Filed July 1, 1937. 11 claims. (Cl. 216-25). Machine for applying dry wrappers to cylindrical rolls.

Instrumentation Studies. XXVII

Rate of Penetration of Oil Through Paper

Part II: An Improvement in the Method of Calculating Rates and Distances Penetrated from Data Obtained With the I. P. C. Photoelectric Penetration Meter[1]

By The Staff of The Institute of Paper Chemistry

The results of a theoretical and experimental investigation of the idea that rates of penetration of oil through paper may be obtained from observations on diffuse light transmission have been given in Instrumentation Studies XVIII.[1] It was shown how a curve giving velocity of penetration as a function of time after application of an oil film could be derived from a curve giving observed transmission as a function of time.[2] A defect of the method as described arises from the fact that, initially, the transmission increases rapidly and the microammeter lags appreciably; after a few seconds, the lag is inappreciable, and precise readings are obtained. It is for this reason that the earliest transmissions were plotted at about 5 seconds. The portions of the curves between zero time and about 5 seconds were, strictly, extrapolations, because there is no *a priori* reason to believe that the transmission immediately after application of the oil is the same as that of the dry paper before application; in the absence of knowledge of true values of T_0 it had been assumed that the transmission was not modified by the initial presence of the oil film. The purpose of this supplementary report is to present and describe an improvement in the method of handling the transmission-time data. The new viewpoint gives us a better understanding of the method, furnishes a means for the ready calculation of distances penetrated, reduces uncertainties in calculated rates, and reveals that, using the present experimental equipment, *initial* rates are uncertain, and may be obtained only by an extension of experimental technique.

In the older method of handling the data, uncertainties in calculated rates in the time range from $t = 0$ to $t = 5$ seconds are directly attributed to the difficulty of extrapolating a curve having appreciable curvature. In view of the fact that a linear, or nearly linear, curve can be extrapolated with good accuracy, an empirical formula giving rise to a linear relationship between a function of transmission and a function of time was sought. A suitable relationship was found by straightforward application of the basic theory of the method. It was shown in the previous report on this subject[2] that, very nearly,

$$T = T_0 e^{(\mu_1 - \mu_2)x} \qquad (1)$$

When a liquid penetrates an ideal, perfectly homogeneous sheet under the action of capillary forces alone, and the liquid does not modify the geometrical structure of the sheet, the distance penetrated at any time varies as the square root of the time, or $x = k\sqrt{t}$; this relationship can be deduced by dimensional analysis and is obtained less rigorously by application of Poiseuille's law. The quantity k is a constant depending upon physical constants of the penetrating liquid and the sheet. Substituting this function for x in equation (1), we obtain, after taking logarithms to the base 10,

$$\log_{10} T = \log_{10} T_0 + 0.434\, k\, (\mu_1 - \mu_2)\sqrt{t}. \qquad (2)$$

According to this equation, on plotting $\log_{10} T$ against $\sqrt{t}$, we should obtain a straight line over the time interval during which penetration takes place; after complete transudation has occurred, x becomes constant and equal to d, the thickness of the sheet, and the transmission (and $\log_{10} T$) remains constant from this point on. This is illustrated in Fig. 1. If the curve for an actual sample were not linear, the deviation from linearity would simply mean that, for the sample in question, the law $x = k\sqrt{t}$ was not obeyed; this law was assumed mainly for the purpose of arriving at an improved method of handling the transmission-time data, and, since it is not involved in the formulations giving rates and distances of penetrations, it should be clear that those formulations are not invalidated by deviations from linearity of curves giving log T vs. $\sqrt{t}$.

It will be noticed that each of the curves of Fig. 1 exhibits a sharp bend at the time of transudation. It

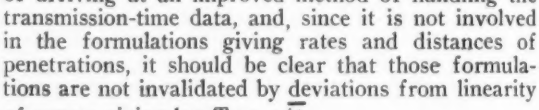


FIG. 1.

Idealized curves showing the linear relation between log T and $\sqrt{t}$. Complete transudation occurs at times associated with the sharp bends in the curves; due to irregular transudation in actual samples the sharp bends do not appear in curves but are replaced by rounded portions illustrated by the dotted lines.

[1] Part I of this series is Instrumentation Studies XVIII, Paper Trade J. 105, No. 8:39-42 (Aug. 19, 1937).

[2] The illustrative speeds given in Part I (Instrumentation Studies XVIII) are in error. Apparently, when the computations were made, a systematic error (involving a factor of 2.3 arising from confusion of natural and common logarithms and a misplaced decimal point) occurred. For example, the value for the initial rate for sample 10909 should have been 0.00151 mm./sec. instead of 0.034 mm./sec. The transmission data and relative values of speeds are correct. From the viewpoint of the new method, the extrapolations to obtain initial rates are held questionable (see text).

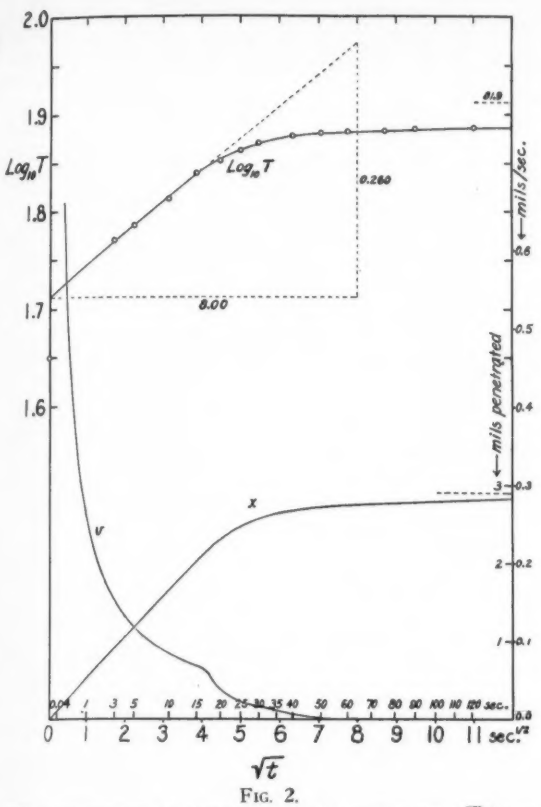


FIG. 2.

This chart presents the observed values of $\log_{10} T$ versus $\sqrt{t}$ for an uncoated book paper. From this parent curve, the curves giving speed of penetration (v), and distance penetrated (x), as functions of $\sqrt{t}$, are derived. Time in seconds is indicated above the axis of abscissae.

is believed that curves for actual samples would also exhibit such sudden changes in slope if it happened that the samples were perfectly uniform in thickness and structure. In actual samples, however, oil penetrates at different rates from point to point, and hence the observed transmissions are weighted averages of transmissions of elemental (very small) areas. If the individual curves for elemental areas exhibited the ideal characteristics, but differed appreciably from one another, the curve determined by transmissions observed with a large test area must necessarily be *curved* in the neighborhood of the time of transudation. This type of deviation from the ideal curve is represented in Fig. 1 by the dotted lines. It is quite reasonable to suppose that the extent of this deviation from the ideal sharp bend would be an indication of the uniformity of the paper.

Illustrative data for an uncoated book paper are presented in Fig. 2. It will be seen that the experimental points fall quite accurately on a curve of the anticipated form. In the case of this particular sample, the curve may be extrapolated to reasonably short times with fairly good accuracy. In general, one does not find quite such good linearity as that exhibited in Fig. 2. In all cases, however, the curves will have curvatures in the region of interest very much smaller than the curvatures of the corresponding curves giving transmission as a function of time. The practical significance is that the accuracy of extrapolation down to times in the neighborhood of one second or less has been greatly improved. A further practical advantage of the new method of handling the data is connected with the square-root scale, which gives a substantial separation of small time intervals at the shorter times. To illustrate this point, attention is called to the accuracy of extrapolation to one second which is a point on the line at a distance from the last plotted point (3 sec.) less than half the distance to zero time; in contrast with this, one should have to extrapolate a curve to a point roughly two-thirds the distance to zero time when transmission is plotted against time.

The derived curves giving speed of penetration (v) and distance of penetration (x) are also given in Fig. 2. Both speed and distance may be obtained from the $\log_{10} T$ vs. $\sqrt{t}$ curve fairly directly. It was shown in Instrumentation Studies XVIII that speed of penetration at any time t is given by

$$v = \frac{dT/dt}{T} \cdot \frac{d}{\log_e (T_\infty/T_0)}. \qquad (3)$$

By differentiation, it is easily shown that the slope of a curve of *any* form giving $\log_e T$ vs. $\sqrt{t}$ is given by

$$\text{slope} = d(\log_e T)/d\sqrt{t} = 2\sqrt{t}\ (dT/dt)/T. \qquad (4)$$

Substitution in equation (3) gives for the speed,

$$v = \frac{(\text{slope}) \cdot d}{2\sqrt{t}\ (\log T_\infty - \log T_0)}. \qquad (5)$$

In this equation one may use either logarithms to the base 10, or Naperian logarithms (to the base e); it is only necessary that the logarithm used in the numerator (in slope) be to the same base as that used in the denominator. The transmission may be expressed either as a fraction, in per cent, or in any units whatever, provided that one is consistent in the use of the units.

Computation from equation (5) may be illustrated with the help of Fig. 2. At time $t = 9$ sec., or $\sqrt{t} = 3$ sec.$^{1/2}$, the slope or tangent is indicated by the dotted line. For a change in $\sqrt{t}$ equal to 8.00 sec.$^{1/2}$, the change in $\log_{10} T$ is 0.260. Therefore the slope is $0.260/8.00 = 0.0325$ sec.$^{-1/2}$. The caliper of the paper is $d = 2.9$ mils (0.0029 inch). From the curve we obtain $\log_{10} T_\infty = 1.89$ and $\log_{10} T_0 = 1.71$. Putting these values in equation (5), we find

$$v = \frac{0.0325 \cdot 2.9}{2 \cdot 3 \cdot (1.89 - 1.71)} = 0.087 \text{ mils/sec.}$$

or 0.000087 inch per second at time 3 seconds after application of the oil film.

The value for T_0 obtained by extrapolation is generally greater than the transmission of the sheet before application of the oil film. The differences noted are quite appreciable and are believed to be real for the following reasons: *(a)* While the new method gives values of v of accuracy independent of conformance or non-conformance of the sample with the law $x = k\sqrt{t}$, this law does require for a perfectly uniform and homogeneous sheet that the curve be a straight line down to times approaching zero; this means that, in the case of the curve of Fig. 2, there is a theoretical reason for extrapolating the curve in the form of a straight line to small times; there appears to be no reason for drawing this curve down to meet the point at $\log_{10} T = 1.65$ (transmission of dry sheet equal to 44.7 per cent). *(b)* At $t = 0$, the curve must have zero slope in order that the initial speed be finite, hence in the immediate vicinity of zero time the curve must deviate ***upward***

from the straight line, rather than downward. *(c)* From optical considerations it is to be expected that, if the application of a film of oil changes the transmission instantaneously, the change must be an *increase,* for the oil causes a reduction in light scattering at the surface.

The computation of initial rates as given in *(2)* is, from the new viewpoint, open to question. On the basis of any law of penetration of liquids into a fibrous structure, the curves giving log T vs. $\sqrt{t}$ must meet the axis of ordinates with zero slope. This follows from the fact that the initial speed would be infinite if the initial slope had a finite value. The particular law, $x = k\sqrt{t}$, gives infinite speed at zero time because the inertia of the oil was neglected in the derivation. The discrepancy is important only for extremely small times, because acceleration of the oil is appreciable only at first contact with the paper surface. However, in some small time interval near zero, perhaps a few thousandths or hundredths of a second after application of the oil film, the curve must bend away from the straight line to meet the axis horizontally. The manner of this upward deviation from the straight line determines the velocities at times very near zero time. While the curves determined by the present experimental method may, in some cases, be extrapolated to give speeds at times of the order of a few tenths of a second after application of the oil film, the present experimental technique cannot be expected to yield data necessary for the determination of the curve near zero time. The velocity curve given in Fig. 2 was terminated at about 0.15 sec.; extrapolation to smaller times would undoubtedly be erroneous, and it is possible that the extrapolation to 0.15 sec. is in appreciable error. It will be necessary to employ more powerful equipment to obtain speeds during the first few thousandths of a second. A high-vacuum photocell, direct current amplifier, and cathode-ray oscillograph would undoubtedly give data of considerable interest.

A curve giving distance of penetration as a function of time is probably of greater practical importance than the curve giving speed. From the fundamental equations given in *(1)*, it follows rather directly that

$$x = [(\log T - \log T_o)/(\log T_\infty - \log T_o)] \cdot d. \quad (6)$$

The quantity in brackets is the fraction of the sheet penetrated. The only variable is seen to be log T, and inspection of the equation shows that the form of a curve giving x vs. $\sqrt{t}$ is similar to that of the parent curve, log T vs. $\sqrt{t}$. Values of $(\log T - \log T_o)$ may be read directly from the parent curve; in the case presented in Fig. 2, this difference is simply the elevation of the parent curve above the dotted line at log $T = 1.71$. In Fig. 2 the derived curve for x gives distance penetrated in mils. If linear extrapolation down to $\sqrt{t} = 0.2$ sec.$^{1/2}$ is justifiable, we see that the distance penetrated in 0.04 sec. is 0.1 mil or 0.0001 inch. It will also be seen that the oil penetrated half the thickness of the sheet in about 7.7 sec.

Derived values of both x and v depend upon the value chosen for log T_∞. When the work described in Instrumentation Studies XVIII was carried out, it was observed that whereas a transmission versus time curve flattened out in several minutes, the transmission nevertheless slowly increased over a period of a day to a final value appreciably in excess of the transmission of the earliest part of the flat region of the curve. It was assumed that this value was the proper value to assign T_∞ in the equation for the speed. This assumption is now challenged. The value of T_∞ taken from the curve of Fig. 2 is about 77.7 per cent (the logarithm of which is slightly above the curve at 120 sec.), while the final value of the transmission was found to be 81.9 per cent, a difference of a little more than 4 per cent. Using the former value, we note that the oil penetrated about 0.97 of the thickness of the sheet (on the average) after 120 seconds penetration time. This is a reasonable value. However, if T_∞ is taken equal to 81.9 per cent, we find that the curve for x flattens out after the oil penetrates about 0.86 of the thickness; this result is very unreasonable in view of the indication from the form of the parent curve that the major part of the oil penetrated in about 50 seconds. As a result of this consideration, it is recommended that log T_∞ be taken from the curve at the earliest indication of constancy of log T. In the case of certain papers, particularly non-homogeneous papers like coated book, there will be appreciable uncertainty in the choice of log T_∞; further study will be necessary for the establishment of a suitable criterion in such cases.

It seems probable that the very slow, final rise in T is to be attributed to oil entering the internal structure of the fibers. The transmission of a sheet depends upon the light scattering coefficient and the light absorption coefficient. As is well known, the presence of oil in contact with the fibers reduces the scattering coefficient through reduction of the relative indices of refraction between the fibers and the surrounding medium. During the earlier stages of the process of penetration of a sheet by oil, the oil tends to fill the space between fibers. At the same time, the oil penetrates the structure of the fibers, but it is quite reasonable to assume that, because of the very small capillary dimensions in a fiber, the penetration of the oil into the structure of the fibers goes on at a comparatively slow rate. If this is true, the penetration of the structure of the fibers continues long after the oil has transuded the sheet. Since the presence of oil in the internal structure of the fibers would further reduce the scattering coefficient of the sheet, the final, slow rise of the transmission would be explained. The more rapid process of oil filling the space between the fibers is, of course, the one directly associated with the penetration test, and hence, if the mechanism proposed above is correct, log T_∞ should be taken from the early part of the "flat" section of the curve.

Pulverized Coal

"C-E Direct Fired Systems for Burning Pulverized Coal" is the title of a new 36-page catalog issued by Combustion Engineering Company, Inc., 200 Madison avenue, New York, N. Y. It contains a synopsis of the development of pulverized coal firing and its influence on the capacities and designs of steam generating units. The section on mills describes both the impact and the bowl mill types for direct firing. That on burners deals with tangential corner firing, vertical firing and horizontal turbulent burners. Mill feeders are also described and considerable space is given to a discussion of furnaces for burning pulverized coal. The 53 illustrations include, in addition to details of mills, feeders and burners, numerous installation views covering application to different boiler types and a wide range in size of boilers as installed throughout the country.

Notes on Attaching a Membrane to a Water-Vapor-Permeability Cell*

By F. T. Carson[1]

Abstract

A simple and effective method is suggested of attaching a specimen to a dish or permeability cell in preparation for a test of permeability to water vapor. The specimen is supported in the mouth of a Petri dish, or other form of permeability cell, while the circular edge is molded in wax, which makes a moisture-tight joint between the specimen and the cell. A templet, which limits the flow of the wax, is used to fix definitely and reproducibly the area of the specimen through which moisture is transmitted. The apparatus used in making such a seal is described. The specimen can be sealed in at any desired height in the cell, and the seal is made with the cell in the upright position.

Papers presented at the symposium on permeability of membrances to water vapor during the 1937 annual meeting of the Technical Association of the Pulp and Paper Industry *(1)* and the discussions that followed, brought out the considerable variety of methods and devices which have been used in attaching the specimen to the permeability cell, and also some of the faults of these methods. A publication of the National Bureau of Standards *(2)* issued a little later in the same year, discussed the general types of methods that have been used in determining the permeability of membrances to water vapor, and tabulated information obtained from the literature about means of atttaching and sealing the specimen to the cell. In that publication there was included also a list of published reports to which the reader is referred for descriptions of methods and apparatus.

The most widely favored method of measuring the amount of moisture transmitted through a material consists in determining the change in weight of a cell to which the specimen is attached as a septum, which separates a source of water vapor on one face from a relatively dry atmosphere on the other. The committee of the Technical Association appointed to formulate a standard testing method for permeability to water vapor has also favored this type of method. Some permeability cells rely on mechanical pressure of clamping surfaces to obtain a seal impervious to water vapor, whereas others depend on waxes and other adhesives to fasten the specimen to the cell and make an impervious joint. The mechanical seals have the virtue of greatly facilitating the preparation of the specimen for the test, and also of presenting (in the absence of leakage) a definite test area. In the case of membranes having a sufficiently smooth and plastic surface, such a seal is probably entirely adequate, but many workers are inclined to distrust a pressure seal and prefer to fasten the specimen to the dish with some kind of wax. Sometimes the pressure seals are supplemented by wax seals. A wax seal usually has the disadvantage that the test area is poorly defined.

An adequate method of affixing the specimen to the permeability cell should insure that (a) the area through which the moisture is to be transmitted is definite and measurable, and (b) leakage of moisture around the specimen from one fixed hygrometric level to the other is prevented. Very little leakage will often be sufficient to nullify the measurement, inasmuch as a good moisture-resistant wrapping material will allow only a few milligrams of moisture to pass in a day through the size of specimen ordinarily tested.

A means of attaching the specimen to the cell that makes use of inexpensive laboratory equipment, produces a moisture-tight joint, and sharply defines the test area, should prove helpful to various workers in allowing them to compare results on a common basis without the necessity of investing in expensive or dubious equipment. This article is a contribution toward that end. The method described, which involves the use of a templet to define the area, has several features in common with that devised by Robert John[2].

[2] A description of the method referred to has not been published under the name of the originator, but a brief description was included in the report of the symposium mentioned at the beginning. See *(1)*.

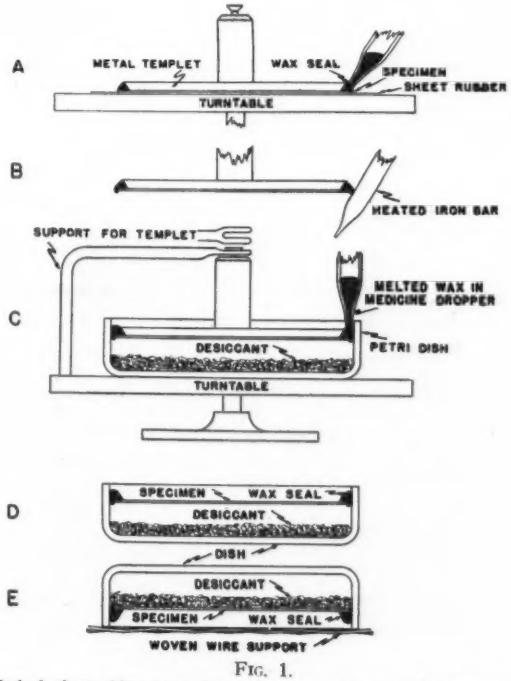


FIG. 1.

Method of attaching a membrane to a permeability cell in preparation for a test of its permeability to water vapor.

* Publication approved by the Director of the National Bureau of Standards, U. S. Department of Commerce.

[1] Associate Technologist, Paper Section, U. S. National Bureau of Standards.

A procedure for affixing the specimen, in which the templet is made to serve also as a support for the specimen while the wax is being applied, is illustrated by Fig. 1. The templet is a disk of metal, preferably aluminum, about 3/32-inch thick, having the edge bevelled. The face having the smaller diameter determines the area of the specimen exposed. To prevent the wax from sticking to the templet, the bevelled edge is coated with a thin film of petrolatum each time a specimen is affixed. Any petrolatum adhering to the contact face must be completely removed before the templet is placed on the specimen.

From the material to be tested a disk is cut that will fit fairly closely inside the permeability cell. It is laid on a piece of sheet rubber, preferably supported by a turntable, as illustrated in Fig. 1-A, for convenience in applying the wax. The metal templet, having the bevelled edge coated with a thin film of petrolatum, is centered on the specimen. Molten wax, dispensed from a medicine dropper, is run around the protruding rim of the specimen. The templet should be provided with slots cut at intervals around the periphery in the upper face. Into these slots small tongues of wax should be allowed to flow. When the wax has hardened these tongues of wax serve to fasten the specimen temporarily to the templet so that the two can be lifted together. If wax has run over the edge of the specimen the underlying sheet rubber can be stripped off without injuring the seal. In Fig. 1-B the templet with the specimen attached is shown being rotated against an iron bar warm enough to melt a little of the wax, which envelops and seals the cut edge of the specimen.

The specimen, attached to the templet, is held at the desired height in the cell in the manner illustrated in Fig. 1-C while it is sealed to the cell. It is convenient to support the assembly on a turntable which is rotated as the molten wax is run in between the templet and the side wall of the permeability cell. This operation is illustrated also in Fig. 2. A suitable amount of desiccant (or a source of water vapor, if it is desired to reverse the direction of the vapor pressure gradient) is placed in the cell before the specimen is affixed. Should the seal appear faulty at any place the wax is remelted at that point by inserting the thin, rounded edge of the heated iron bar. When the wax has hardened the templet is removed by rotating it so as to shear off the wax lugs that flowed into the recesses during the first waxing operation. The resulting test cell, with the specimen sealed on and presenting a definite, clean-cut area is illustrated by Fig. 1-D.

FIG. 2.

Photograph illustrating the method of making the wax seal in a permeability cell, facilitated by the use of a turntable.

Some difficulty may be encountered in sealing by this method certain very thin membranes that tend to curl at the edges, leaving sometimes a considerable gap to be bridged over with the wax. In such a case the wax should be first heated only slightly above the melting point, and small portions applied at intervals around the annular space during the waxing stage illustrated in Fig. 1-C, after which the intervening spaces are filled in. In this way the small portions of molten wax are quickly chilled by the cool surfaces and a continuous film of wax can be built up. Judicious remelting with the heated bar is usually necessary to remedy numerous small defects that are likely to occur.

A somewhat modified method of affixing the specimen may sometimes be preferable in such cases as that just mentioned and for certain other special cases, such as hand-fabricated disks of material having a somewhat irregular outline. This method makes use of a flat metal ring or annular plate to which the specimen is attached, in a manner somewhat like that described by Kline *(2)* before it is attached to the permeability cell. The annular plate, coated with wax, is laid on a piece of the material to be tested, and the end of a heated iron bar is pressed down on it at various points, melting some of the wax and sticking the two together. The specimen, if larger than the annular plate, should then have the protruding surplus trimmed off. This annular plate supports the specimen, keeps it flat, and holds it in a fixed position. From this point on the affixing of the specimen may be handled in the manner previously described and illustrated in Figs. 1 and 2, or the annular plate with the attached specimen uppermost may be supported by an expansion ring while the wax is being applied to fasten it to the permeability cell. In either case the templet and the aperture in the annular plate should be the same size, and the annular plate should, of course, fit nicely into the permeability cell. The expansion ring, if chosen, need be no more elaborate than an open ring of springy wire inserted at the desired height in the cell to serve as a ledge on which to rest the annular plate while the molten wax is applied. This method requires an annular plate and an expansion ring for each permeability cell, whereas the method first described requires no supporting rings. However, if the space below the specimen is to be filled with a granular desiccant the expansion ring may be dispensed with and the annular plate allowed to rest on the desiccant. Except in special cases the procedure first described is probably preferable.

Various mixtures of waxes, resins, and gums have been used and recommended by various workers. No particular recommendations in this respect are made here. A mixture, however, of equal parts of beeswax and rosin was used in the experimental work on the method of sealing here described. This mixture was found to be slightly hygroscopic, and a blank test cell was prepared for each set of specimens tested simultaneously. The blank consisted of a disk of aluminum foil sealed in the same manner as the others into a cell otherwise empty. Changes in weight

of this blank were attributed primarily to gain or less of moisture by the sealing mixture (hitherto referred to as wax), and corresponding corrections were made in the weights of the other permeability cells.

The method described conforms to the requirements of the procedure for determining permeability to water vapor suggested by the Technical Association committee charged with this project. This procedure stipulates an open-mouthed dish, containing a desiccant of high drying efficiency (anhydrous magnesium perchlorate being recommended), over the mouth of which the specimen is fastened in such a way as to preclude the possibility of leakage. The prepared cells are inverted so that the granular desiccant lies on the specimen in the manner shown in Fig. 1-E. The permeability cells are supported on woven wire, or other suitable support that will allow free access of air, before a fan in an atmosphere of 65 per cent relative humidity and a temperature of 21 deg. C. They are weighed at intervals until a constant rate of gain is attained. This rate is to be reported as the permeability to water vapor in grams per square meter in 24 hours at 21 deg. C. and 65 per cent relative humidity. The procedure stipulates that the area of the specimen exposed must be very sharply defined.

The method which has been described can readily be adapted to the testing of various kinds of sheet material, to various testing conditions, and to various forms of laboratory dishes and receptacles that might be used as permeability cells, such as crystallizing dishes, Petri dishes, and evaporating dishes of glass, metal, or other material. The lower halves of Petri-dish sets, having a diameter of approximately 90 mm., make convenient cells. They afford a relatively large test area and yet are not too large to fit on the pans of most chemical balances. They should preferably have ground edges rather than fire-polished edges, since the latter often flare inward, making it somewhat difficult to get the specimen in after the edges have been waxed. With such dishes it is possible to use a templet having a contact area of 50 to 55 sq. cm. and still leave an annular space for wax wide enough to ensure a good seal without the use of an excessive amount of wax.

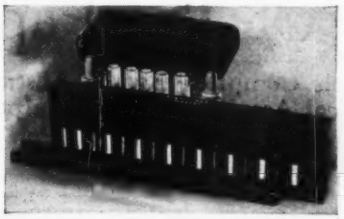
In addition to making an adequate edge seal and defining precisely the area of the specimen exposed, the method of affixing a specimen that has been described in this article has other important advantages not possessed by most methods previously described. The seal is made with the cell in the upright position, which is a matter of some moment, especially when it is desired to confine a liquid within the cell. This procedure allows the specimen to be affixed at any desired height within the cell, making it easy to minimize the air space under the specimen, and, therefore, to decrease the uncertainty sometimes residing in the vapor-pressure gradient across a layer of still air separating the specimen from the conditioning agent in the cell.

Literature Cited

(1) Tech. Assoc. Papers, XX:90 (1937).
(2) Carson, F. T. Permeability of Membranes to Water Vapor, With Special Reference to Packaging Materials, *J. Research, National Bureau of Standards* 18:235 (1937), R.P.974.

New pH Slide Comparator

A new slide comparator for the colorimetric determination of pH, chlorine and phosphates has been developed by W. A. Taylor & Co., 872 Linden avenue, Baltimore, Md. The new outfit is molded entirely from plastic. Radical changes in design have resulted in marked improvement in appearance, durability and ease of handling. The weight has also been considerably reduced. All pH, chlorine and phosphate values, as well as the indicator names, are engraved in white directly on the plastic slides. Improved catches are used to hold the top on the base and all metal parts are rustproof. The whole outfit, including the slide is 10 inches long, 2⅛ inches wide and 4 inches high and weighs only 1½ lbs.



The new comparator consists of a slide and a base. Each slide contains 9 color standards alternating with ampoules of distilled water. All color standards are guaranteed by the manufacturer to maintain their accuracy for a period of 5 years.

The base contains 2 vials of indicator solution, with 0.5cc pipettes, 5-5cc test tubes, and a piece of etched glass in a special compartment. Determinations are made by filling three of the test tubes with the test sample, adding 0.5cc of indicator solution to the middle one, pacing the slide on the base and moving it back and forth until the test sample matches one of the color standards. The pH, chlorine or phosphate value is then read off directly from the values on the slide. One base can be used with any number of color standard slides. Full information on these outfits can be obtained from the manufacturer.

To Visit Crane Laboratories

A veritable metallurgical "Scotland Yard" will be exhibited by Crane Company's Division of Engineering and Research when it holds open house November 8, 9 and 10, at its enlarged laboratories at 42nd street and South Kedzie avenue, Chicago. The staff of 255 persons, headed by Dr. L. W. Wallace, director, will be host to scientists, educators, research men, engineers, business executives, magazine and newspaper editors.

Devices which subject metals to 200,000 pounds pressure, 200,000 pounds tension, to temperatures of 3200 degrees Fahrenheit, which can peer into metals to a depth of 10-inches and which can magnify them 6500 times will be in operation. A miniature foundry will carry through its various processes at intervals. A sanitation and hydraulics laboratory will reveal a variety of tests and experiments with plumbing materials. A thermal laboratory will show what is being done to make still more efficient devices for maintaining comfortable temperatures.

Tour of the division of engineering and research will include the metallographic and spectrographic laboratories, photographic laboratories, radiographic laboratory, materials testing laboratory, creep of metals laboratory, physical and chemical laboratory, ceramics laboratory, welding laboratory, process metallurgy laboratory, ceramics smelting, works laboratory, design and development department, industrial products laboratory offices and library.

Following the inspection of laboratories guests will have the option of taking any one of four conducted tours of the Chicago Works of Crane Co.

Review Of The Paper Industry Literature

Abstracts Compiled By the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman.

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Pulp and Paper Testing

Plasticity and Elasticity of Paper. Paul Klemm. Wochbl. Papierfabr. 68, No. 48:916-18 (Nov. 27, 1937). Discussion of the terms plasticity and elasticity of paper and conditions affecting each. The elasticity is closely related to the density of the sheet and atmospheric conditions play an important part in elasticity and plasticity.—J.F.O.

Concerning Optical Investigations of Papers. A. Herzog. Wochbl. Papierfabr. 68, No. 48:918-21 (Nov. 27, 1937).—The value of examining papers, both printed and plain fibers, with polarized light is discussed in detail. Two sidedness and printing properties can be studied to great advantage with polarized light.—J.F.O.

Studies on Color Measurements. Report No. 1. A statistical consideration of the values obtained from the Ives tint-photometer. Research Bull., Govt. Print. Bur., Tokyo, No. 1. 1937. B. I. P. C. 8.281.—The Ives tint-photometer was used to obtain the red, green, and blue reflectances (R.G.B.) of 17 lithographic papers which covered a wide range in hue and purity. The individual results of 30 normal observers are presented for each of the papers. The dominant wavelengths of the samples were determined by means of a Nutting colorimeter and the values obtained were used to calibrate rectangular charts in which, for example, (B—G) is plotted against (R—G). These calibrated charts are intended to be used in the determination of the dominant wavelength of a paper from the differences in the observed (R.G.B.) values. In the English section of the paper, no discussion of the significance of the magnitude of the deviations between the readings of individual observers is given.—C.J.W.

Volumetric Determination of Alpha-, Beta- and Gamma-Cellulose in Pulps and Papers Containing Sizing, Filler and Other Materials. Herbert F. Launder. J. Research Natl. Bur. Standards 20:87-95 (1938) (Research Paper No. 1068).—The volumetric method for the determination of alpha-, beta- and gamma-cellulose previously described is shown to be applicable to papers containing rosin, glue, starch, oxidizable fillers and lignin, and to pulps containing natural resins in any amount. The manner of making corrections for the oxidizable materials is described in detail. The relative shortness of the volumetric procedure is especially apparent when the papers contain mineral fillers or lignin, as these are removed when necessary rather than estimated and corrected for.—A.P.-C.

The Bursting Value of Paper. F. Venneman. Mon. Papeterie Belge 18, No. 1:33-37 (Jan., 1938).—The merits of the bursting test, as compared with the tensile strength test, are discussed. It is suggested that the results should be expressed in a manner that would be independent of the weight of the paper, and the term "bursting value" is proposed to express the number of square meters of paper of the same weight as the sample tested to balance, by weight, the bursting strength as indicated on the tester.—A. P.-C.

The Hinde & Dauch Paper Co. Crush Tester. Pierre Drewsen. Paper Trade J. 106, No. 10:45-47 (March 10, 1938).—A description of the design and operation of a new crush tester, more particularly intended for straw corrugating paper and container liner board. The principle of the instrument consists in applying a vertical load on a sample resting on a steel bar or strip and measuring the deflection of the bar at the breaking load. The bar is selected with dimensions such that a load of 1 lb. causes a deflection of 0.001 inch, and the deflection is measured by a gage contacting the bottom of the bar.—A.P.-C.

Investigation Concerning the Crushing Strength of Non-finished Cartons. Paul Paris. Papier-Ztg. 63, No. 5:78-79 (Jan. 15, 1938); B.I.P.C. 8:275.—Four boxes each of equal size were prepared from non-glazed and one-sided glazed cartons, the lids of group A extending to the bottom of the box, those of group B being a little shorter, and those of group C being still shorter. After being subjected to controlled pressure in a screw press, the non-glazed boxes gave better results throughout than those prepared from cartons glazed on one side. A and B non-glazed gave the highest values, followed by A and B glazed on one side, both types of C giving much inferior values.—C.J.W.

Container Testing Standards. J. D. Malcolmson. Paper Trade J. 106, No. 8:130-134 (Feb. 24, 1938).—Tentative standards are proposed for bursting strength of combined corrugated container board, bursting strength of container grades of paperboards and built-up solid fiber containers, thickness of container grades of paperboard and built-up fibreboard for containers, conditioning of container grades of paperboard and of solid fiber and corrugated containers for testing, and basis weight of container grades of paperboards and built-up solid fiber and corrugated container boards.—A. P.-C.

Ulvir Rays in the Service of Lacquer and Artificial Leather Research. Walter M. Muenzinger. Nitrocellulose 9, No. 1:3-7 (Jan., 1938); B.I.P.C. 8:286.—Reference is made to possibilities of accelerated aging tests of cellulose ester films with Ulvir lamps, whose spectrum resembles actual sunlight and includes the infrared, the entire visible spectrum, and the ultraviolet. Special filters permit the exclusion of certain fields and the testing of the effects of individual rays. A new control test is the investigation of cellulose film structures by examining cross sections under the microscope in the ultraviolet, the different fluorescence of the layers indicating their various constituents. Special directions are given for obtaining sharp microphotographs of the individual layers by the use of suitable filters, either in the ultraviolet or infrared. Specimens of such photographs are included.—C.J.W.

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WEEK ENDING OCTOBER 29, 1938

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Decalcomanias .....6 cs.
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The Borregaard Co., Inc., *Gripsholm,* Gothenburg, 584 rolls, 52 bls.
———, *Gripsholm,* Gothenburg, 101 rolls.
Kraemer & Co., *Gripsholm,* Gothenburg, 139 bls.
Japan Paper Co., *G. Maersk,* Kobe, 52 cs.
———, *Westernland,* Antwerp, 7 cs.
Penson & Co., *Ile de France,* Havre, 16 cs.
Halperin Shipping Co., *Ile de France,* Havre, 5 bls.
———, *Vingaren,* Gothenburg, 98 rolls.

RAGS, BAGGINGS, ETC.

Chase National Bank, *Binnendyk,* Rotterdam, 125 bls. bagging.
Castle & Overton, Inc., *Batory,* Copenhagen, 141 bls. rags.
Hughes Fawcett, Inc., *Black Heron,* Antwerp, 7 bls. flax waste.
———, *Konigstein,* Antwerp, 7 bls. flax waste.
Hughes Fawcett, Inc., *Franconia,* Liverpool, 39 bls. flax waste.
National City Bank, *Westernland,* Antwerp, 105 bls. old strings.
———, *American Importer,* Manchester, 50 bls. old linens, 20 bls. new cuttings, 77 bls. paperstock.
E. J. Keller Co., Inc., *Exochorda,* ———, 84 bls. rags.
W. J. Green & Co., Inc., *Exochorda,* Alexandria, 94 bls. rags.
W. Steck & Co., *Exochorda,* Alexandria, 210 bls. bagging.
Banco Coml. Italiane Trust Co., *Exochorda,* Alexandria, 50 bls. bagging.
———, *Exochorda,* Alexandria, 76 bls. rags.
Loumar Textile By Products, *Manhattan,* Hamburg, 98 bls. bagging.
Keene, Inc., *West Cusseta,* Havre, 41 bls. rags.
Darmstadt Scott & Courtney, *West Cusseta,* Dunkirk, 56 bls. rags.
Loumar Textile By Products, *West Cusseta,* Dunkirk, 222 bls. bagging.
———, *West Cusseta,* Dunkirk, 80 bls. jute waste.
Richard Shipping Co., *West Cusseta,* Dunkirk, 82 bls. rags.
Chase National Bank, *St. Louis,* Hamburg, 247 bls. bagging.

HIDE CUTTINGS, ETC.

———, *American Importer,* Liverpool, 268 bags hide cuttings.
———, *Saturnia,* Trieste, 100 bags bone glue sheets.
———, *Saturnia,* Trieste, 500 bags hide glue (ground).

OLD ROPE

D. Benedetto, Inc., *Black Heron,* Antwerp, 88 coils.
W. Steck & Co., *Veendam,* Rotterdam, 142 coils.
Keene, Inc., *West Cusseta,* Havre, 155 coils.

WOOD PULP

Bulkley Dunton Pulp Co., Inc., *Pr. Harding,* ———, 4163 bls. wood pulp, 859 tons.
Absorbo Beer Pad Co., *Pr. Harding,* Hamburg, 160 bls. wood pulp, 21 tons.
———, *Black Heron,* Rotterdam, 140 bls. wood pulp, 27 tons.
A. Giese & Son, *Veendam,* Rotterdam, 40 bls. wood pulp.
Pulp Sales Corp., *Vingaren,* Viipuri, 3302 bls. sulphate.
M. Sone, *Vingaren,* Stockholm, 1200 bls. sulphite.
J. Anderson & Co., *Vingaren,* Gothenburg, 250 bls. sulphite.
Castle & Overton, Inc., *Vingaren,* Gothenburg, 300 bls. dry pulp.
Bank of N. Y. Trust Co., *St. Louis,* Hamburg, 345 bls. wood pulp, 69 tons.
Gottesman & Co., Inc., *Etna,* Sweden, 630 bls. wood pulp.

WOOD PULP BOARDS

Fibre Case & Novelty Co., Inc., *Gripsholm,* Gothenburg, 8 bls.
H. Fuchs & Son, *Gripsholm,* Gothenburg, 51 crates.
———, *Vingaren,* Viipuri, 151 rolls.
Jay Madden Corp., *Vingaren,* Kotka, 220 rolls.
Oliner Fibre Co., *Vingaren,* Gothenburg, 21 bls.

ALBANY IMPORTS

WEEK ENDING OCTOBER 29, 1938

International Paper Co., *Lutz,* Chatham, N. B., 1100 cords pulpwood.

BOSTON IMPORTS

WEEK ENDING OCTOBER 29, 1938

E. Butterworth & Co., Inc., *Binnendyk,* Rotterdam, 323 bls. gluestock.
E. Butterworth & Co., Inc., *American Shipper,* Manchester, 292 bags hide cuttings.
L. W. Cronkhite, *Port Hunter,* Auckland, 13 bags casein.
E. J. Keller Co., Inc., *West Cusseta,* ———, 565 bls. rags.
L. Henkels, Co., *West Cusseta,* Dunkirk, 16 bls. rags.

PHILADELPHIA IMPORTS

WEEK ENDING OCTOBER 29, 1938

J. W. Hampton Jr., & Co., *Vingaren,* Kotka, 86 rolls newsprint.
Jay Madden Corp., *Vingaren,* Kotka, 84 rolls wood pulp boards.
Perkins Goodwin & Co., *Vingaren,* Gothenburg, 394 bls. sulphate.
Castle & Overton, Inc., *Vingaren,* Gothenburg, 150 bls. sulphite, 300 bls. dry pulp.
The Borregaard Co., Inc., *Vingaren,* Gothenburg, 193 rolls, 178 bls. paper.
Paper House of Pennsylvania, *Vingaren,* Gothenburg, 11 cases paper.
———, *Vingaren,* Gothenburg, 6 bls., 10 rolls wrapping paper.
E. J. Keller Co., Inc., *City of Flint,* ———, 197 bls. bagging, 65 coils old rope.

BALTIMORE IMPORTS

WEEK ENDING OCTOBER 29, 1938

———, *Binnendyk,* Rotterdam, 48 rolls kraft paper.
American Express Co., *Black Heron,* Antwerp, 9 cs. stencil paper.
Pulp Sales Corp., *Vingaren,* Viipuri, 3495 bls. sulphite, 1980 bls. sulphate.
Wilkinson Bros. & Co., Inc., *Vingaren,* Kotka, 210 rolls newsprint.
Jay Madden Corp., *Vingaren,* Kotka, 1213 rolls newsprint.
Lagerloef Trading Co., *Vingaren,* Kotka, 709 bls. mechanically ground pulp.
Perkins Goodwin & Co., *Vingaren,* Stockholm, 600 bls. sulphite.
Perkins Goodwin & Co., *Vingaren,* Gothenburg, 168 bls. sulphate.
The Borregaard Co., Inc., *Vingaren,* Gothenburg, 750 bls. dry pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING OCTOBER 29, 1938

International Paper Sales Co., *Hallbjorg,* Dalhousie, 2155 rolls newsprint.

MONTREAL IMPORTS

WEEK ENDING OCTOBER 29, 1938

Pagel Horton & Co., Inc., *Randsfjord,* Sweden, 25250 bls. wood pulp.
Gottesman & Co., Inc., *Randsfjord,* Sweden, 1000 bls. wood pulp.
Price & Pierce, Ltd., *Randsfjord,* ———, 11250 bls. unbleached sulphate.

Natronag Acquired by Waldorf

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 2, 1938—An important development in the German paper industry took place through the purchase of the stock of the Natronzellstoff- und Papierfabriken A.G. (better known as Natronag), by the large Zellstoff-Fabrik Waldhof concern, according to a report from the office of the American Consulate General, Frankfort-on-Main. The control of Natronag was hitherto held by the Hartmann family which at one time practically dominated the German paper industry. By this transaction the former influence of the Hartmann concern was practically eliminated. This process of withdrawal from the paper industry commenced some time ago when the Hartmann interests in the Dresdner Chromo- und Kunstdruck Papierfabrik Krause & Baumann A.G. were merged in 1937 with the Feldmuehle Papier- und Zellstoffwerke A.G. Kostheim Cellulose und Papierfabrik A.G., in Mainz-Kostheim, was already acquired last year by the Waldhof concern. By acquiring a dominating interest in Natronag the Waldhof Company, which, in addition to its strong position in the sulphite chemical pulp branch of the industry, now also occupies a predominant position in the manufacture of soda pulp. Of the entire German wood pulp production estimated in 1937 at around 1,500,000 metric tons, almost 500,000 metric tons were produced by the Waldhof company and its affiliation, Kostheim Cellulose und Papierfabrik A.G.

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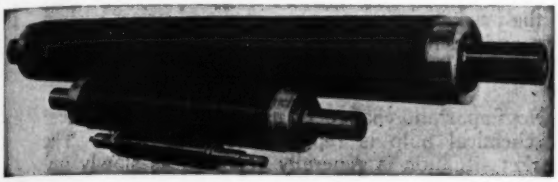

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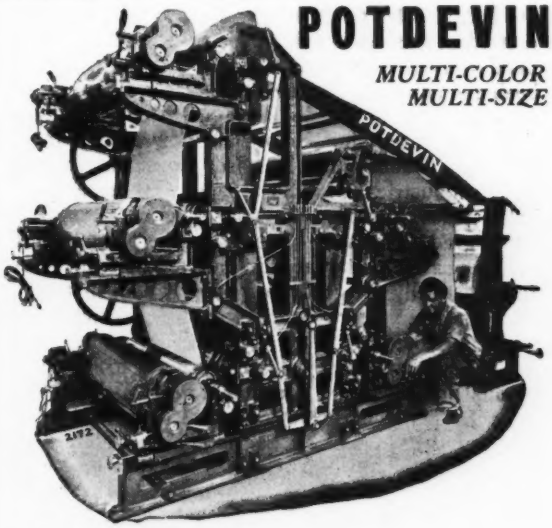

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, November 2, 1938.

The gradual improvement in the general business situation continues, despite the little change reported for the current week. The index of general business activity remains unchanged at 87.7 per cent for this week, or about 10 per cent lower than for the corresponding period last year. Losses reported in some major industries for the week, such as in lumber, are offset by increases in other industries, such as automobile production. The production of over 200 paper mills for the week ended October 22, was 83.2 per cent, compared with 73.5 per cent for the corresponding week of last year. Production of paper board continues at 70 per cent.

Wholesale sales in general have little changed since last week. The trend of practically all industrial activity is, however, apparently upward and the prevailing opinion indicates that we will make new advances in the future. Confidence is reported gaining but considerable doubt still looms large and this is indicated in the cautious buying and a hesitancy to expand present volume at this time. As the general business situation improves this lack of confidence will likely be superseded by a more courageous attitude, as underlying factors are now mainly favorable for a substantial upward movement in most major industries, of which paper is one, and this holds true regarding the wholesale distribution of many grades of paper. The lag in the printing trade is a deterrent factor at this date. Wholesale prices for practically all grades of paper are firm and no changes from representative quoted market prices are reported.

The demand for newsprint continues to indicate a gradual improvement. Consumption, which declined some 30 per cent below normal has now regained much of the volume lost and is approximately 8 per cent under that of 1937. Prices are firm and while one newsprint mill continues to quote a price of $48 per ton, the prevailing price, representing about 85 per cent of production, is unchanged at $50 per ton. Sales volume for many grades of sulphite paper continues to gradually improve and reports from many distributing sources indicate that business during September was substantially above that of the preceding month. The demand for writing paper reflects continued improvement, with the general expectation of continued increased consumption. September business is reported as the best month in the current year. Tissue paper production continues close to capacity with distribution reported at a high level. Production of kraft paper is at a high level and orders are also well balanced against production. In general, the price situation is relatively well stabilized, with no important changes in prevailing quotations expected by the trade.

Mechanical Pulp

A gradual improvement in the demand for mechanical pulp is reported for the week. Consumption continues to slowly improve. No important change in the market situation is reported and prices remain firm and unchanged.

Chemical Pulp

No important change in either demand or prices of chemical pulp is reported for this week. The market situation is generally reported as slowly improving as more inquiries are being received. Only a gradual improvement in current conditions is expected by the trade in the near future. Prices are relatively firm with the future trend uncertain.

Old Rope and Bagging

Business in the old rope market is reported as rather light, with prices holding steady and unchanged for the current week. Old bagging is rather quiet and while prices are none too firm on some grades, roofing grades are steady.

Rags

The gradual improvement in the domestic rag market continues, but volume is rather light. Prices continue unchanged for all grades of new and old domestic rags, with the exceptions of blue overall and the higher grades of roofing rags. Blue overall is currently quoted at from 5.25 to 5.50 per cwt; No. 1 roofing rags at from $1.10 to $1.20; and No. 2 roofing rags at from $95 to $1 per cwt., which is an increase of 10 cents per pound for the week. The foreign rag market is inactive. Prices are nominal.

Old Waste Paper

A little improvement is reported in some quarters of the old waste paper trade but volume is rather low with prices of some grades rather soft. As the current price level is generally conceded to be low, little change is expected by the trade until a more substantial mill demand develops. Prices of all grades remain unchanged for this week.

Twine

Only a gradual pick up in demand is looked for in any grade of hard or soft fiber twine at this date. Business continues to gradually improve, with prices holding firm at prevailing representative quoted market prices.

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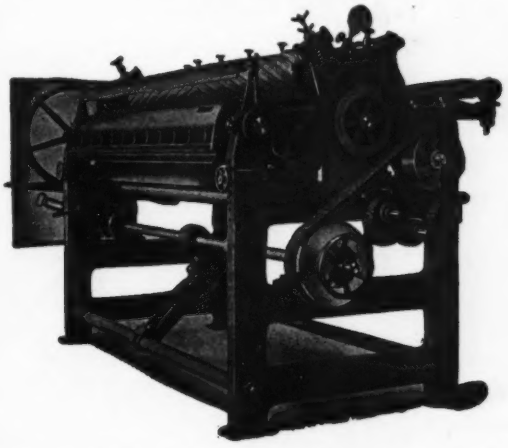

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WOOD PULP
AGENTS

PRICE & PIERCE, Ltd.,

60 EAST 42nd ST.
NEW YORK

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wendesday, November 2, 1938.

BLANC FIXE—The prices of blanc fixe continue firm and are unchanged at representative market quotations. The pulp is offered at from $42.50 to $45 per ton, in bulk; the powder is quoted at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Quotations on bleaching powder continue firm and conform to prevailing market levels. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The demand for casein continues moderate. Standard domestic ground, 20-30 mesh, is quoted at from 8½ to 9 cents per pound; 80-100 mesh at 9½ cents per pound; all prices in bags, car lot quantities.

CAUSTIC SODA—Quotations on caustic soda continue firm and conform to prevailing market prices. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—The prices of china clay are firm and unchanged at prevailing market levels. Domestic filler clay is quoted at from $6.50 to $12 per ton; coating clay at from $11 to $12 per ton, at mines. Imported clay is quoted at from $14.50 to $25 per ton, ship side.

CHLORINE—Quotations on chlorine are firm and conform to prevailing market prices. Chlorine is quoted at $2.15 per 100 pounds, in single-unit tank cars, f. o. b., works.

ROSIN—The demand for rosin is reported fair for the current week. "G" gum rosin is quoted at $5.25; "FF" wood rosin at $5.10 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is quoted at $2.83 per 100 pounds, f. o. b., shipping point.

SALT CAKE—Prices of salt cake continue firm and unchanged at prevailing market quotations. Quotations range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f. o. b., shipping point. Imported salt cake is quoted at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—Quotations on soda ash are firm and conform to prevailing market prices. Quotations on soda ash in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The corn starch market is reported as quite firm. Globe pearl is quoted at $2.40 per 100 pounds, in bags, and at $2.65 in barrels. Special paper starch is quoted at $2.50 per 100 pounds, in bags, and at $2.75 in barrels; all prices in car lots, f. o. b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina remain firm and are unchanged at prevailing market levels. The commercial grades are quoted at $1.15; iron free at $1.30 per 100 pounds, in barrels, car lot quantities, f. o. b., works.

SULPHUR—The prices of sulphur continue firm under a good demand. Annual contracts are quoted at $16 per long ton, f. o. b., cars at mines. Spot and nearby car lots are offered at $19 per ton.

TALC—Quotations on talc are quite firm and conform to prevailing market prices. Domestic talc is quoted at from $15 to $18 per ton, Eastern mines. Imported talc is quoted at from $25 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	@	—
Kraft—per cwt.—Delivered Zone A			
No. 1 Northern	$4.75	@	$5.25
Superstandard	4.12½	@	4.62½
Northern Standard Wrapping	4.00	@	—
Standard Wrapping	3.50	@	—
Tissues—Per Ream—Carlots			
White No. 1	.92½	@	—
White No. 1 M. G.	.90	@	—
White No. 1½	.67½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.75	@	—
Colored	.87½	@	—
Kraft	.75	@	—
Manila	.60	@	—
Unbl. Toilet, 1 M.	3.20	@	—
Bleached Toilet	5.26	@	—
Paper Towels—			
Unbleached	1.80	@	—
Bleached	2.10	@	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	$8.25	@	$9.75
No. 2 Jute	7.50	@	9.00
No. 1 Manila Wrapping, 35 lb.	5.00	@	—
No. 2 Manila Wrapping, 35 lb.	4.75	@	—
Boards, per ton—			
News	$27.50	@	$30.00
Chip	27.50	@	30.00
Sgl. Mla. Ll. Chip.	42.50	@	—
Jute Lined Chip	42.50	@	45.00
White Pat. Coated.	55.00	@	57.50
Kraft Liners	42.50	@	50.00
Binders Boards	71.00	@	77.00

The following are representative of distributors' resale prices:—

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1.	$39.10@	$46.00	$40.25@	$47.25
100% Rag	31.05@	36.50	32.20@	37.75
85% Rag			29.90@	35.00
75% Rag	23.60@	27.75	24.75@	29.00
65% Rag			21.65@	26.25
50% Rag	17.55@	21.50	18.70@	22.75
25% Rag	14.65@	17.75	15.80@	19.25

Colors at $1.00 cwt. extra

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$8.80@	$10.75	$9.95@	$12.00
No. 3	7.90@	9.50	9.05@	11.00
No. 4	7.00@	8.50	8.20@	10.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$10.80@		$12.25
No. 2 Glossy Coated	9.25@		10.50
No. 3 Glossy Coated	8.15@		9.25
No. 4 Glossy Coated	7.65@		8.75
No. 1 Antique (watermarked)	7.65@		8.75
No. 2 Offset	7.00@		8.00
A Grade E. F.	6.80@		7.75
A Grade S. & S. C.	7.05@		8.00
B Grade E. F.	6.25@		7.25
B Grade S. & S. C.	6.50@		7.50
C Grade E. F.	6.00@		7.00
C Grade S. & S. C.	6.25@		7.25
D Grade E. F.	5.70@		6.75
D Grade S. & S. C.	5.95@		7.00

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	25.00	@	28.00
Dry	25.00	@	28.00
(Delivered)			
No. 1 Domestic and Canadian	29.00	@	33.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	2.35	@	2.75
Prime Qualities—			
Easy-Bleaching Sulphite	1.90	@	2.10
Strong Unbleached Sulphite	1.80	@	2.00
(On Dock, Atlantic Ports)			
Kraft Bleached	2.50	@	2.75
Kraft Light & Strong	1.90	@	2.00
Kraft No. 1	1.65	@	1.85
Kraft No. 2	1.50	@	1.65
(F.o.b. Pulp Mill)			
Kraft Domestic	1.50	@	1.90
(Delivered)			
Soda Bleached	2.55	@	—

Add 60 cents per short ton, duty charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.75	@	7.00
Silesias No. 1	4.00	@	4.25
New Unbleached	6.75	@	7.00
Blue Overall	5.25	@	5.50
Fancy	2.10	@	2.25
Washables	1.60	@	1.75
Mixed Khaki Cuttings	3.25	@	3.75
O. D. Khaki Cuttings	4.00	@	4.25

Old Rags

White, No. 1—			
Repacked	3.15	@	3.40
Miscellaneous	2.60	@	2.75
White, No. 2—			
Repacked	1.90	@	2.10
Miscellaneous	1.50	@	1.60
Thirds and Blues—			
Repacked	1.40	@	1.50
Miscellaneous	1.25	@	1.35
Roofing Rags—			
No. 1	1.10	@	1.20
No. 2	.95	@	1.00
No. 3 (bagging)	.85	@	.90
No. 4	.65	@	.70
No. 5A	.65	@	.70

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxford	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	@	7.50
No. 3 White Linens	4.50	@	—

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STATION A CINCINNATI, OHIO

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons..	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.40	@	2.50
Domestic	2.25	@	2.35
Wool Tares, light...	1.80	@	1.90
Wool Tares, heavy...	1.90	@	2.00
Bright Bagging.....	1.70	@	1.80
Manila Rope—			
Foreign	2.90	@	3.00
Domestic	2.50	@	2.75
Jute Threads.....	2.75	@	3.00
Sisal Strings.....	1.50	@	1.60
Mixed Strings.....	.60	@	.70

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.65	@	2.70
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.75	@	1.80
Soft White Extra..	2.25	@	2.40
Flat Stock—			
Stitchless	.80	@	.85
Overissue Mag.....	.70	@	.75
Solid Flat Book...	.60	@	.65
Crumbled No. 1...	.40	@	.45
Ledger Stock White.	1.15	@	1.25
Ledger Stock Colored	.65	@	.70
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut.....	1.40	@	1.50
New Cuttings.....	1.25	@	1.35
Old Kraft Machine—			
Compressed bales..	.65	@	.75
News—			
No. 1 White News	1.35	@	1.40
Strictly Overissue.	.50	@	.55
Strictly Folded....	.30	@	.35
No. 1 Mixed Paper..	.15	@	.20

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.11	@	.13
White Hemp.....	.12	@	.14
Fine Polished—			
Fine India.....	.15	@	.17
Unpolished—			
Box	.08½	@	—
Paper Makers.....	.07½	@	.08¾
Tube Rope.....	.09	@	.10
Wall Paper.....	.10	@	.11
Wrapping	.11	@	.13
Soft Fiber Rope...	.09½	@	.11¾
Cotton	.15	@	.20

(Hard Fiber)

Medium Java.....	.09	@	.10
Mex. Sisal.....	.08½	@	.09½
Manila	.18	@	.25
Domestic	2.65	@	2.75
Sisal Rope.....	1.65	@	1.85
Mixed Rope.....	.50	@	.75
Transmission Rope...	1.90	@	2.00
Soft Jute Ropes.....	1.85	@	2.00
Jute Carpet Threads..	.75	@	.90
Gunny Bagging—			
Foreign	2.25	@	—
Domestic	2.00	@	—
Bleachery Burlap....	3.25	@	3.62½
Scrap Burlap—			
Foreign	1.65	@	1.85
Domestic	1.40	@	1.55
Scrap Sisal	1.25	@	1.30
Scrap Sisal for Shredding	1.75	@	1.90
Wool Tares, Heavy..	1.65	@	1.85
New Burlap Cuttings	2.00	@	2.25
Aust. Wool Pouches.	2.75	@	3.25
Heavy baling bagging	1.85	@	2.00
Paper Mill Bagging..	1.00	@	1.15
No. 2 Bagging.....	.55	@	.75

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints...	.03¼	@	.03½
New White No. 1...	.06¾	@	.07
New Light Flannelettes	.04¼	@	.04¾
Silesias No. 1.....	.04¼	@	.04½
New Black Silesias..	.03¾	@	.04
Silesias No. 1			
Soft Unbleached.....	6.50	@	7.00
Blue Cheviots.....	.05	@	.05¼
Fancy	.03	@	.03¾
Washable	.02¾	@	.03

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.71
Miscellaneous	2.50	@	2.71
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.23
Twos and Blues.....	1.75	@	2.00
Old Blue Overalls...	1.50	@	—
Third and Blues—			
Repacked	1.37½	@	1.71
Miscellaneous	1.23	@	1.43¾
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.81
No. 3.....	.65	@	.70
Cottons—According to grades—			
Blue Overalls.....	.04¼	@	.05
New Black, soft...	.03¼	@	.04
Khaki Cuttings....	.03¼	@	.03¾
O. D. Khaki.....	.04	@	.04¾
Corduroy	.02¾	@	.03
New Canvas.....	.06¾	@	.07¼
B.V.D. Cuttings.....	—	@	.06¾

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.05	@	1.13
Dutch Blues.....	2.65	@	2.71
New Checks and Blues	2.85	@	1.00
Old Fustians.....	2.25	@	2.50
Old Linsey Garments	2.20	@	2.25
New Silesias.....	4.75	@	—

PHILADELPHIA

Domestic Rags (New)

(Prices to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.06	@	.06¼
New White, No. 2.	.03½	@	.04
Light Silesias.....	.03½	@	.04
Silesias, No. 1....	—	@	.04½
Black Silesias, soft.	—	@	.03
New Unbleached..	.05½	@	.06
Washable, No. 1..	.01½	@	.01¾
Blue Overall.....	.04	@	.04½
Cottons—According to grades—			
Washable No. 2...	.01	@	.01¼
New Blue.....	.01	@	.01¼
Fancy Percales....	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03	@	.03½
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.25
Miscellaneous	2.50	@	2.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1....	—	@	.95
Domestic No. 1...	—	@	.95
Domestic No. 2...	—	@	.85
Roofing Bagging..	—	@	.60

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.75	@	2.00
Domestic	1.50	@	1.75
Manila Rope.....	2.75	@	3.00
Sisal Rope.....	1.50	@	1.75
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.50
No. 2.....	1.00	@	1.25
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	.75	@	1.00
No. 1 New Light Burlap	2.50	@	3.00
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	2.25	@	2.30
No. 2 Hard White.	1.90	@	2.00
No. 1 Soft White..	1.75	@	1.80
No. 2 Soft White..	1.30	@	1.40
No. 1 Mixed.....	.65	@	.75
Solid Ledger Stock..	1.45	@	1.50
Ledger Stock, white.	1.15	@	1.20
Ledger Stock, colored	.75	@	.80
No. 1 Books, heavy..	.60	@	.75
Manila Cuttings.....	1.45	@	1.50
Print Manila.....	.40	@	.45
Container Manila....	.35	@	.40
Kraft Paper.....	.75	@	.80
No. 1 Mixed Paper..	.20	@	.25
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.40	@	.45
Old Newspapers.....	.35	@	.40

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.50
No. 1 Soft White..	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.50	@	1.75
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.65	@	.75
No. 1 Books, light...	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.85	@	2.00
Manila Envelope Cuttings, extra quality.	2.00	@	2.10
No. 1 Old Manila....	.80	@	.90
White Blank News	1.30	@	1.40
No. 1 Kraft.....	.90	@	—
Mixed Papers.....	.15	@	—
Print Manila.....	.45	@	.55
Container Manilas...	.27½	@	—
Old Newspapers.....	.25	@	.32½
Paper Wool Strings..	.75	@	—
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Kraft corrugated boxes	.70	@	—
Kraft corrugated boxes	.65	@	.70
Screening Wrappers..	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	3.00	@	3.15

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White..	1.50	@	—
Ledger & Writings..	.75	@	.80
Solid Books.....	.45	@	.50
Blanks	.90	@	—
Krafts	.45	@	.50
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila.....	Nominal		
Overissue News.....	.35	@	—
Old Newspapers—			
No. 1 Folded News	.25	@	.30
No. 1 Mixed Paper	.15	@	.30
Roofing Stocks—			
No. 1.....	1.00	@	1.05
No. 2.....	.85	@	—

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White	.36½	@	—
No. 1 Tints	.37½	@	—
No. 2 White	.26½	@	—
No. 2 Tints	.27½	@	—
No. 4 White	15.50	@	16.50
No. 4 Tints	16.50	@	—
No. 5 Bond—White	11.25	@	—
No. 5 Bond—Tints	12.25	@	—
No. 5 Bond—Golden Rod	12.75	@	—
No. 5 Ledger—White	11.25	@	—
No. 5 Ledger—Tints.	11.25	@	—
No. 6 Bond—White .	10.15	@	—
No. 6 Bond—Tints .	10.65	@	—
No. 6 Bond—Golden Rod	12.15	@	—
No. 7 Bond—White .	8.50	@	—
No. 7 Bond—Tints .	9.00	@	—
No. 7 Bond—Golden Rod	10.50	@	—
Book—			
No. 1 M. F.	7.35	@	—
No. 2 M. F.	6.85	@	—
No. 3 M. F.	5.60	@	—
No. 1 S. C.	7.60	@	—
No. 2 S. C.	7.10	@	—
No. 3 S. C.	6.10	@	6.35
No. 1 Coated Book and Litho	12.50	@	—
No. 2 Coated Book and Litho	11.00	@	—
No. 3 Coated Book and Litho	10.00	@	—
Coated tinted.....	13.50	@	—
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.25
White Wrap	4.00	@	—
"B" Manila.....	4.90	@	6.15
No. 1 Manila.....	5.50	@	6.90
Fiber	5.50	@	6.90
Kraft No. 2.....	5.50	@	6.90

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)..	$46.00	@	—
Sheets	54.00	@	—

Pulp

Ground wood.....	29.00	@	—
Unbleached Sulphite..	49.00	@	—
Kraft	50.00	@	—
Soda	54.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.25	@	—
Soft White.....	2.15	@	—
White Blk. News..	1.25	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.80	@	—
Light and Crumpled Book Stock.	.70	@	—
Ledgers and Writings	1.10	@	—
Manilas—			
New Manila Cut...	1.35	@	—
Printed Manilas...	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue.	.50	@	—
Strictly Folded....	.45	@	—
No. 1 Mixed Paper..	.30	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06¾	@	.07
Fancy Shirt Cuttings	.02¼	@	.02½